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A61K 31/554

A61P 35/00

**МІНІСТЕРСТВО ОСВІТИ
І НАУКИ УКРАЇНИ**

ДЕРЖАВНИЙ ДЕПАРТАМЕНТ
ІНТЕЛЕКТУАЛЬНОЇ
ВЛАСНОСТІ

ОПИС

ДО ПАТЕНТУ НА ВИНАХІД

(54) АНЕЛОВАНІ КАРБАМОІЛАЗ АГЕТЕРОЦИКЛИ, ФОКУСОВАНА БІБЛІОТЕКА, ФАРМАЦЕВТИЧНА КОМПОЗИЦІЯ ТА СПОСІБ ЇХНЬОГО ОДЕРЖАННЯ (ВАРІАНТИ)

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(31) 2004113251

(32) 29.04.2004

(33) RU

(46) 27.10.2008, Бюл.№ 20, 2008 г.

(72) ІВАЩЕНКО АЛЕКСАНДР ВАСИЛЬЄВИЧ,
ВВЕДЕНСКИЙ ВЛАДИМІР ЮР'ЄВИЧ, ІЛЬІН
АЛЕКСЕЙ ПЕТРОВІЧ, КИСІЛЬ ВОЛОДИМИР
МИХАЙЛОВИЧ, УА, ХВАТ АЛЕКСАНДР
ВІКТОРОВІЧ, КУЗОВКОВА ЮЛІЯ
АЛЕКСАНДРОВНА, КУТЕПОВ СЕРГЕЙ
АЛЕКСАНДРОВІЧ, ДМІТРИЄВА ІРИНА
ГЕННАДІЄВНА, ЗОЛОТАРЬОВ ДЕНІС
АНАТОЛЬЄВИЧ, ТКАЧЕНКО СЕРГЕЙ
ЄВГЕНЬЄВИЧ, ОКУНЬ ІЛІЯ МАТУСОВІЧ,
КРАВЧЕНКО ДМІТРИЙ ВЛАДИМІРОВІЧ, КОБАК
ВЛАДИМІР ВАСИЛЬЄВИЧ, ТРІФІЛЕНКОВ АНДРЕЙ
СЕРГЕЄВИЧ, МІШУНІНА ЮЛІЯ СЕРАФІМОВНА,
ЛОСЕВА МАРІНА ВАСИЛЬЄВНА, РИЖОВА ЄЛЕНА
АЛЕКСАНДРОВНА, ПАРЧІНСКИЙ ВЛАДИСЛАВ
ЗЕНОНОВІЧ, ЦІРУЛЬНИКОВ СЕРГЕЙ
АЛЕКСАНДРОВИЧ, СОСЕЛОВ АЛЕКСАНДР
СЕРГЕЄВИЧ, ОСОБЕННОСТЬЮ "ИССЛЕДОВАТЕЛЬСКИЙ
ИНСТИТУТ ХИМИЧЕСКОГО РАЗНООБРАЗИЯ"

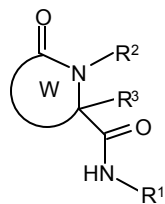
(56) GB 1441554 A

SU 725565 A

SU 936815 A

EA 003061 B1

(57) 1. Анеговані карбамойлазагетероцикли загальної формули 1



(1)

де: W являє собою 6-оксопіперазиновий, [1,4]діазепановий, [1,4]тіазепановий або [1,4]оксазепановий цикл, анелований принаймні з одним необов'язково заміщенням і необов'язково конденсованим гетероциклом Q;

R^1, R^2 і R^3 представляють незалежно один від одного атом водню, інертний замісник, необов'язково заміщений C_1 - C_6 алкіл, необов'язково заміщений C_3 - C_6 циклоалкіл, необов'язково заміщений феніл, необов'язково заміщений арил, необов'язково заміщений гетероциклі;

Q являє собою пірольний, піразольний, імідазольний, тіазольний, піролідиновий, індольний, бензофурановий, 4,5,6,7-тетрагідробензотіофеновий, тіно[3,2-*b*]пірольний, фуру[3,2-*b*]пірольний, тіно[2,3-*b*]пірольний, бензімідазольний, піридино-вий, хіноліновий або 1,2,3,4-тетрагідроізохіноліновий цикл.

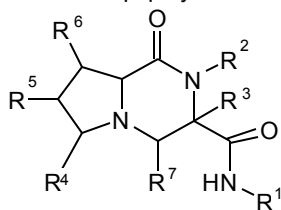
2. Сполуки за п. 1, що являють собою заміщені 1-оксо-1,2,3,4-тетрагідропіроло[1,2-а]піразин-3-карбоксаміди загальної формули 1.1 і 3-оксо-2,3,4,6-тетрагідро-1Н-піроло[1,2-а]піразин-1-карбоксаміди загальної формули 1.2, 6-оксо-5,6-дигідро-4Н-бензо[*f*]піроло[1,2-а][1,4]діазепін-4-карбоксаміди загальної формули 1.3, 5-оксо-1,3,4,5,6,7,8,9-октагідро-2Н-10-тіа-6,9-

C2
(13)

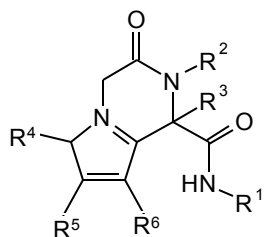
(11) 84447

UA⁽¹⁹⁾

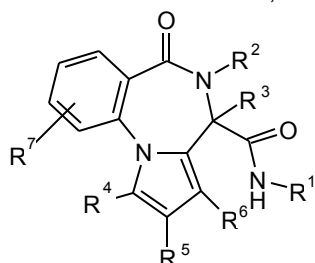
діазабензо[а]-циклопента[е]азулен-7-карбоксаміди загальної формули 1.4



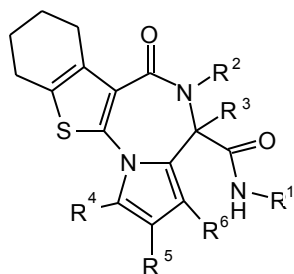
1.1



1.2



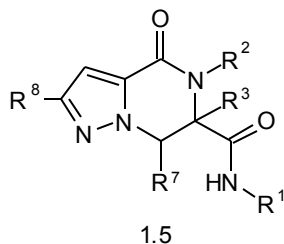
1.3



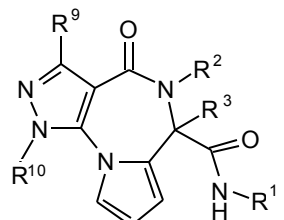
1.4

де: R^1 , R^2 і R^3 мають вищевказане значення; R^4 , R^5 і R^6 незалежно один від одного представляють атом водню, інертний замісник, необов'язково заміщений C_1 - C_6 алкіл, необов'язково заміщений C_3 - C_8 циклоалкіл, необов'язково заміщений феніл, необов'язково заміщений арил, необов'язково заміщений гетероциклі; R^7 представляє атом водню або необов'язково заміщений C_1 - C_6 алкіл.

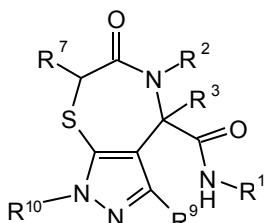
3. Сполуки за п. 1, що являють собою заміщені 4-оксо-4,5,6,7-тетрагідропіразоло[1,5-а]піразин-6-карбоксаміди загальної формули 1.5, 4-оксо-1,4,5,6-тетрагідро-1,2,5,9а-тетрааза-циклопента[е]азулен-6-карбоксаміди загальної формули 1.6 і 6-оксо-4,5,6,7-тетрагідро-1H-8-тіа-1,2,5-тріазаазулен-4-карбоксаміди загальної формули 1.7



1.5



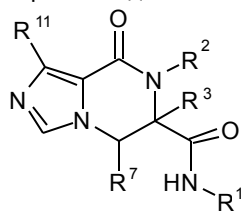
1.6



1.7

де: R^1 , R^2 , R^3 і R^7 мають вищевказане значення; R^8 і R^9 незалежно один від одного представляють атом водню, карбоксилалкіл, карбокси, необов'язково заміщений карбамоїл; R^8 , R^9 і R^{10} незалежно один від одного представляють інертний замісник, необов'язково заміщений C_1 - C_6 алкіл, необов'язково заміщений C_3 - C_8 циклоалкіл, необов'язково заміщений феніл, необов'язково заміщений арил, необов'язково заміщений гетероциклі.

4. Сполуки за п. 1, що являють собою заміщені 8-оксо-5,6,7,8-тетрагідроімідазо[1,5-а]піразин-6-карбоксаміди загальної формули 1.8

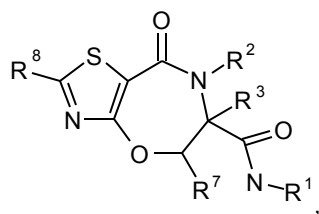


1.8

де: R^1 , R^2 , R^3 і R^7 мають вищевказане значення; R^{11} являє собою атом водню, карбоксилалкіл, карбокси, необов'язково заміщений карбамоїл.

5. Сполуки за п. 1, що являють собою заміщені 8-оксо-5,6,7,8-тетрагідро-4-окса-1-тіа-3,7-діазаазулен-6-карбоксаміди загальної формули 1.9

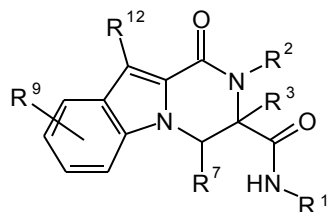
5



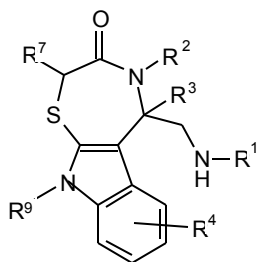
1.9

де: R^1 , R^2 , R^3 , R^7 і R^8 мають вищевказане значення.

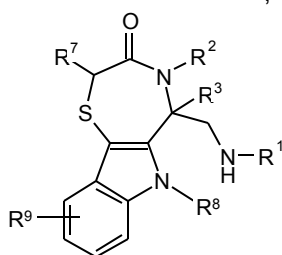
6. Сполуки за п. 1, що являють собою заміщені 1-оксо-1,2,3,4-тетрагідропіразино[1,2-а]індол-3-карбоксаміди загальної формули 1.10, 7-оксо-5,7,8,10-тетрагідро-6H-9-тіа-6,10-діазабензо[а]азулен-5-карбоксаміди загальної формули 1.11, 7-окса-7,8,9,10-тетрагідро-6H-5-тіа-8,10-діазабензо[а]азулен-9-карбоксаміди загальної формули 1.12 і 9-оксо-7,8,9,10-тетрагідро-6H-5-тіа-8,10-діазабензо[а]азулен-6-карбоксаміди загальної формули 1.13



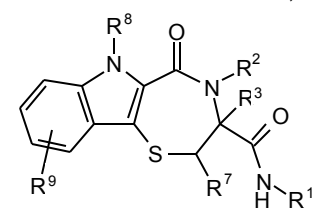
1.10



1.11



1.12



1.13

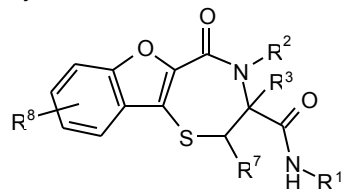
де: R^1 , R^2 , R^3 , R^7 , R^8 і R^9 мають вищевказане значення;

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R^{12} представляє атом водню, інертний замісник, заміщену аміногрупу, пірол-1-іл.

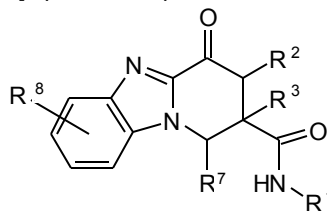
7. Сполуки за п. 1, що являють собою заміщені 9-оксо-6,7,8,9-тетрагідро-10-окса-5-тіа-8-азабензо[а]азулен-7-карбоксаміди загальної формули 1.14



1.14

де: R^1 , R^2 , R^3 , R^7 і R^8 мають вищевказане значення.

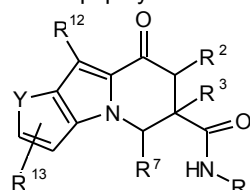
8. Сполуки за п. 1, що являють собою заміщені 1-оксо-1,2,3,4-тетрагідро-бензо[4,5]імідазо[1,2-а]піразин-3-карбоксаміди загальної формули 1.15



1.15

де: R^1 , R^2 , R^3 , R^7 і R^8 мають вищевказане значення.

9. Сполуки за п. 1, що являють собою заміщені 7-оксо-4,5,6,7-тетрагідро-1-тіа-3b,6-діазациклопента[а]інден-5-карбоксаміди загальної формули 1.16 і 7-оксо-4,5,6,7-тетрагідро-1-окса-3b,6-діазациклопента[а]інден-5-карбоксаміди загальної формули 1.17

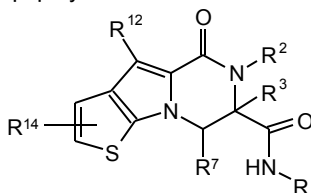


1.16 (Y=S), 1.17 (Y=O)

де: R^1 , R^2 , R^3 , R^7 і R^{12} мають вищевказане значення;

R^{13} представляє атом водню або необов'язково заміщений C_1 - C_6 алкіл.

10. Сполуки за п. 1, що являють собою заміщені 7-оксо-4,5,6,7-тетрагідро-3-тіа-3b,6-діазациклопента[а]інден-5-карбоксаміди загальної формули 1.18

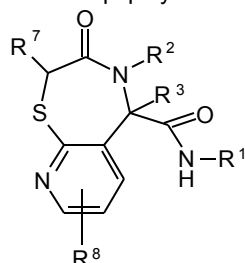


1.18

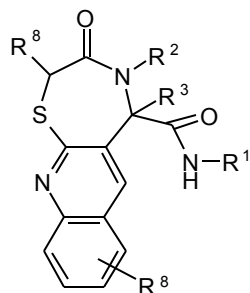
де: R^1 , R^2 , R^3 , R^7 і R^{12} мають вищевказане значення;

R^{14} представляє атом водню або необов'язково заміщений C_1 - C_6 алкіл.

11. Сполуки за п. 1, що являють собою заміщені 7-оксо-5,6,7,8-тетрагідро-9-тіа-1,6-діазабензоциклопента-5-карбоксаміди загальної формули 1.19 і 8-оксо-7,8,9,10-тетрагідро-6-тіа-5,9-діазациклопента[b]нафталін-10-карбоксаміди загальної формули 1.20



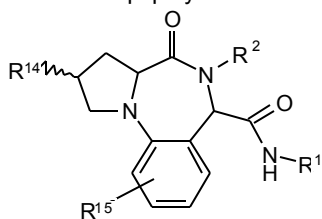
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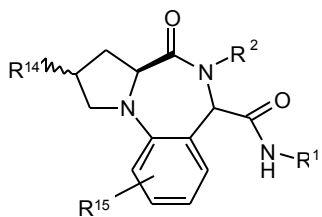
1.20

де: R^1 , R^2 , R^3 , R^7 і R^8 мають вищевказане значення.

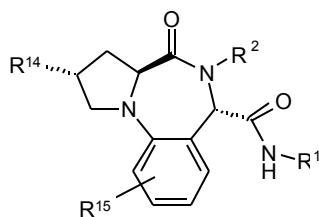
12. Сполуки за п. 1, що являють собою заміщені 4-оксо-2,3,3а,4,5,6-гексагідро-1Н-бензо[*f*]піроло[1,2-а][1,4]діазепін-6-карбоксаміди загальної формули 1.21, (3а)-4-оксо-2,3,3а,4,5,6-гексагідро-1Н-бензо[*f*]піроло[1,2-а][1,4]діазепін-6-карбоксаміди загальної формули 1.22, (3а,6S)-4-оксо-2,3,3а,4,5,6-гексагідро-1Н-бензо[*f*]піроло[1,2-а][1,4]діазепін-6-карбоксаміди загальної формули 1.22а і (3а,6S)-4-оксо-2,3,3а,4,5,6-гексагідро-1Н-бензо[*f*]піроло[1,2-а][1,4]діазепін-6-карбоксаміди загальної формули 1.22b



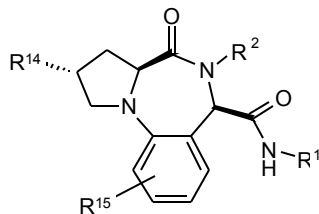
1.21



1.22



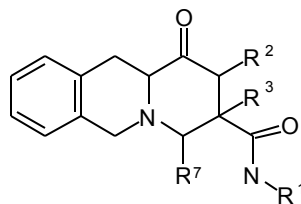
1.22a



1.22b

де: R^1 і R^2 мають вищевказане значення;
 R^{14} являє собою атом водню або необов'язково заміщену гідроксигрупу;
 R^{15} атом водню, NO^2 , CF^3 , CN, карбоксилалкіл, карбокси, необов'язково заміщений карбаміол, необов'язково заміщена аміногрупа.

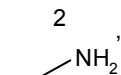
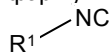
13. Сполуки за п. 1, що являють собою заміщені 1-оксо-1,3,4,6,11,11а-гексагідро-2Н-піразино[1,2-*b*]ізохінолін-3-карбоксаміди загальної формули 1.23



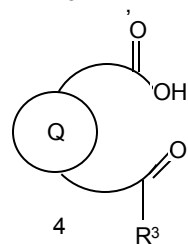
1.23

де: R^1 , R^2 , R^3 і R^7 мають вищевказане значення.

14. Спосіб одержання анелованих карбаміоїлаза-гетероциклів загальної формули 1 шляхом трикомпонентної конденсації відповідного ізонітрилу загальної формули 2, відповідного первинного аміну загальної формули 3 і відповідного гетероциклічного біфункціонального реагенту загальної формули 4



3

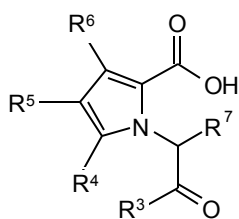


4

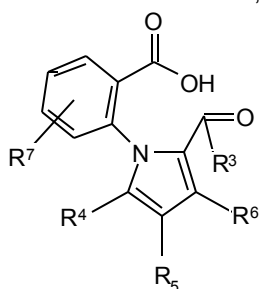
де: Q, R^1 , R^2 і R^3 мають вищевказане значення.

15. Спосіб одержання сполук за п. 14, який **відрізняється** тим, що як біфункціональні реагенти 4 використовують гетероциклічні сполуки, що міс-

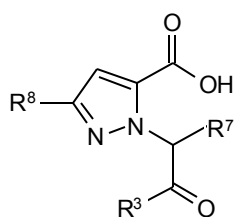
тять карбоксильну і карбонільну групи загальної формули 4.01-4.23,



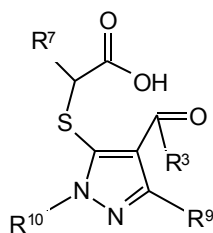
4.1



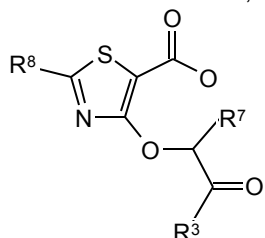
4.3



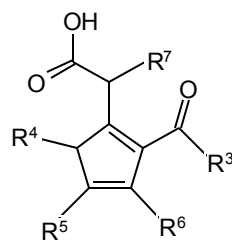
4.5



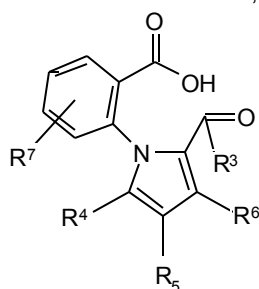
4.6



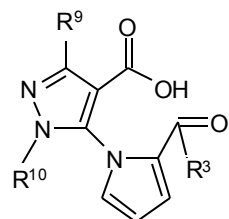
4.9



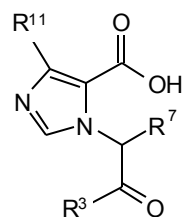
4.2



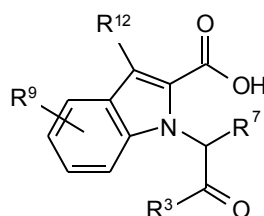
4.3



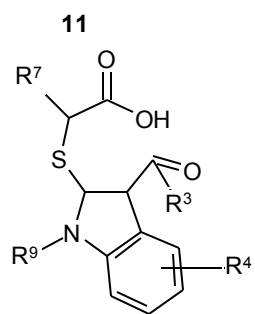
4.6



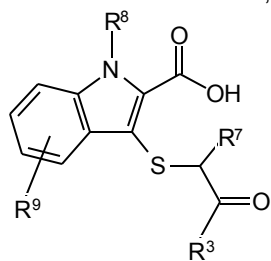
4.8



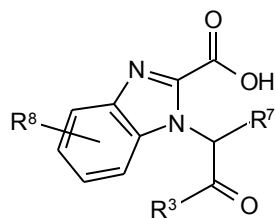
4.10



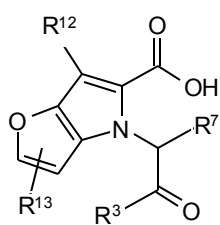
4.11



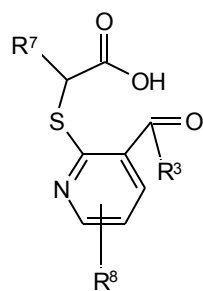
4.13



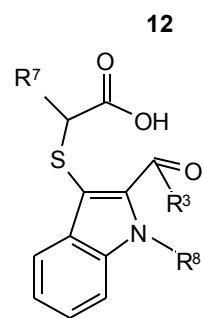
4.15



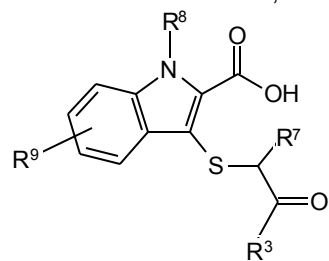
4.17



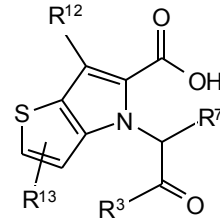
4.19



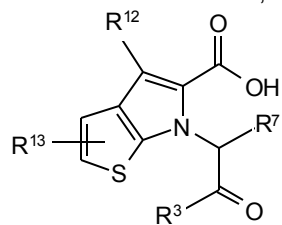
4.12



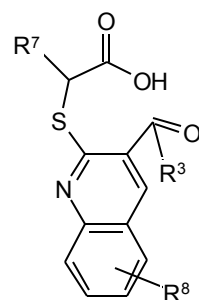
4.14



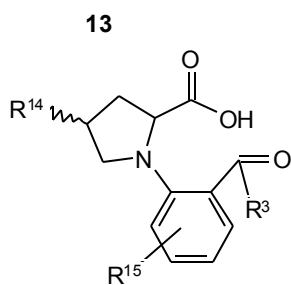
4.16



4.18

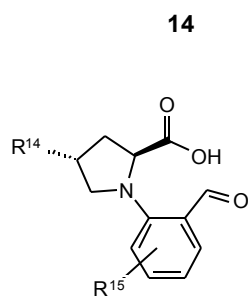


4.20

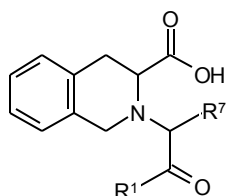


4.21

84447



4.22



4.23

де R^3 - R^{15} мають вказані в пп. 2-12 значення.

16. Фокусована бібліотека для визначення сполук-лідерів, яка містить принаймні одну сполуку загальної формули 1 за п. 1.

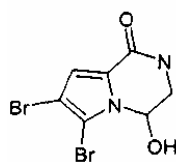
17. Фармацевтична композиція, яка має антиканцерну активність, що містить принаймні одну анеловану карбамоїлазагетероциклічну сполуку загальної формули 1 за п. 1 або її фармацевтично прийнятну сіль.

Даний винахід відноситься до синтезу нових хімічних речовин, пошуку нових фізіологічно активних речовин, сполук-лідерів і лікарських кандидатів, одержуваних на підставі скринінгу комбінаторних або фокусованих бібліотек сполук, а також до фармацевтичної композиції, способів їхнього одержання і застосування.

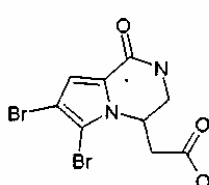
Більш конкретно, даний винахід відноситься до нових анелованих карбамоїлазагетероциклів, що представляють інтерес як потенційні фізіологічно активні речовини (агоністи, антагоністи та модулятори рецепторів, інгібітори ферментів, онколітики, антибактеріальні і протипаразитарні агенти та ін.), до фокусованої бібліотеки, яка містить анеловані карбамоїлазагетероцикли, фармацевтичної

композиції, що містить як активну субстанцію анеловані карбамоїлазагетероцикли, до способів їхнього одержання і застосування.

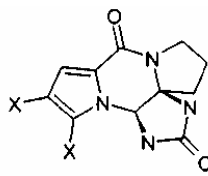
Існує велика кількість природних і синтетичних фізіологічно активних сполук, молекули яких являють собою анеловані азатетероцикли. Серед природних слід зазначити антинеопластичні та антибактеріальні алкалоїди лонгамід, лонгамід В та факеллстатини, виділені з морських губок *Agelas* genus, *Homaxinella* sp. і *Phakellia mauritiana* [Cafieri, F., et al. J.Nat.Prod. 1998, 61: 122. Umeyama A., et al. J.Nat.Prod. 1998, 61: 1433. Poullennec K., Romo D. J.Am.Chem.Soc. 2003, 125: 6344]



(+/-)-Longamide



(+/-)-Longamide B

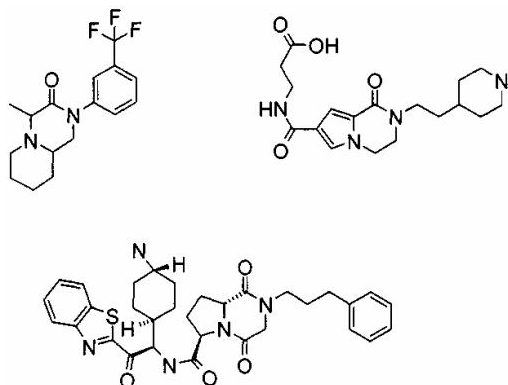


X = H, (-)-Phakellistatin
X = Br, (-)-Dibromophakellistatin

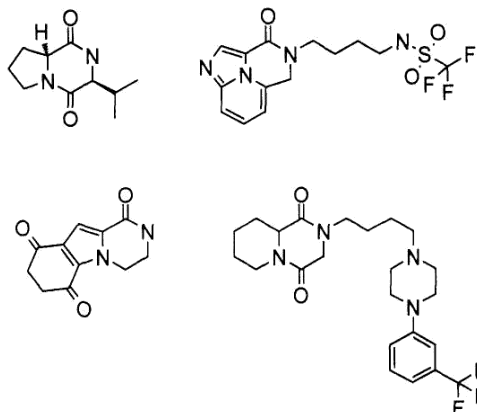
Синтетичні анеловані карбамоїлазагетероцикли виявляють винятково широкий спектр фізіологічної активності. Наприклад, 4-метил-2-(3-трифторметилфеніл)-гексагідропіrido[1,2-а]піразин-3-он виявляє властивості анксиолітика й антидепресанту [Silvestrini, B., Baiocchi, L. ACRAP Sp. WO 8705022, 1987]. 3-[1-оксо-2-[2-(піперидин-1-ил)етил]-1,2,3,4-тетрагідро-піроло[1,2-а]піразин-7-

илкарбоксамідо]пропіонова кислота є антагоністом фібриногенового gpIIb/IIIa рецептора і внаслідок цього ефективно інгібує агрегацію тромбоцитів [Askew, B.C et al. J.Med Chem. 1997, 40(12):1779], а [6S-[6 α [(R*(транс),8 α]]-N-[1-(4-аміноциклогексил)-2-(2-бензотіазоліл)-2-оксоетил]-1,4-діоксо-2-(3-фенілпропіл)-пергідро-піроло[1,2-а]піразин-6-карбоксамід є антикоагулянт, інгібу-

ючи серинові протеази тромбін і фактор Ха. [Berryman, K.A.; Doherty, A.M.; Edmunds, J.J.; Siddiqui, M.A. Pfizer Inc. WO 9748706, 1997].



Антибактеріальні властивості виявляє 3-ізопропілгексагідропіроло[1,2-а]піразин-1,4-діон [Kwon O., et al. J.Antibiot. 2001, 54(2): 179], а N-[4-(3-оксо-3,5-дигідро-1,4,8b-триазааценафтилен-4-ил)бутил]трифторметансульфонамід є інгібітором рецепторної PDGF кінази і внаслідок цього потенційним засобом для лікування ниркової недостатності, гіперліпідемії і гіпертензії. [Ikemoto, T. et al. Tetrahedron 2000, 56(40): 7915]. Високу антипротозойну активність виявляє 3,4,7,8-тетрагідро-2H-піразино[1,2-а]індол-1,6,9-тріон [Tapia, R., et al. Eur.J.Org.Chem. 2002, 23: 4005], а 2-[4-(3-трифторметилфеніл)піперазин-1-ил]бутил]гексагідропіридо[1,2-а]піразин-1,4-діон є високоефективним лігандом серотонінового 5-HT1a рецептора [Lopez-Rodriguez, M., et al. J.Med.Chem. 2001, 44(2): 186].



З огляду на високий потенціал і широкий спектр фізіологічної активності анелованих азатероциклів актуальною є розробка нових сполук цього типу, фокусованих бібліотек і фармацевтичних композицій, які містять ці сполуки, а також способи їхнього одержання і застосування.

У результаті проведених досліджень, спрямованих на пошук нових фізіологічно активних речовин, сполук-лідерів, винахідники одержали невідомі раніше анеловані карбамоїлазатероцикли, яким властива фізіологічна активність, фокусовану бібліотеку і фармацевтичну композицію, яка містить ці сполуки, розробили способи їхнього одержання і застосування.

Нижче наведені визначення термінів, які використані в описі винаходу.

«Комбінаторна бібліотека» означає колекцію сполук, отриманих паралельним синтезом, призначену для пошуку сполуки-хіта або лідера, а також для оптимізації фізіологічної активності хіта або лідера, причому кожна сполука бібліотеки відповідає загальному скефолду і бібліотека є колекцією споріднених гомологів або аналогів.

«Фокусована бібліотека» означає комбінаторну бібліотеку, або сукупність декількох комбінаторних бібліотек, або сукупність бібліотек і речовин, спеціальним чином організовану з метою збільшення імовірності перебування хітів та лідерів або з метою підвищення ефективності їхньої оптимізації. Дизайн фокусованих бібліотек, як правило, пов'язаний зі спрямованим пошуком ефекторів (інгібіторів, активаторів, агоністів, антагоністів і т.п.) визначених біомішеней (ферментів, рецепторів, іонних каналів і т.п.).

«Сполука-хіт» («хіт») означає сполуку, яка проявила в процесі первинного скринінгу шукану фізіологічну активність.

«Сполука-лідер» («лідер») означає сполуку з видатною (максимальною) фізіологічною активністю, пов'язану з конкретною біомішенню, яка відноситься до визначеного (або декількох) патології або хвороби.

«Паралельний синтез» означає метод ведення комбінаторного хімічного синтезу бібліотеки.

«Скефолд» означає загальну структурну формулу або молекулярний каркас або інваріантну область сполук, характерну для всіх сполук, які входять до комбінаторної бібліотеки.

«Нуклеофільний» означає електрононадлишковий реагент.

«Електрофільний» означає електронодефіцитний реагент.

«Замісник» означає хімічний радикал, що приєднується до скефолда або напівпродукту синтезу в процесі їхнього синтезу, наприклад, «нуклеофільний замісник», «електрофільний замісник», «NH-захисний замісник» або «інертний замісник».

«Необов'язково заміщений радикал» означає радикал без замісників або який містить один або кілька замісників, у тому числі: «нуклеофільний замісник», «Електрофільний замісник», «NH-захисний замісник» та/або «інертний замісник».

«Нуклеофільний замісник» означає хімічний радикал, що приєднується до скефолда в результаті реакції з нуклеофільним реагентом, наприклад, обраним із групи первинних або вторинних амінів, спиртів, фенолів, меркаптанів і тіофенолів.

«Електрофільний замісник» означає хімічний радикал, що приєднується до скефолда в результаті реакції з електрофільним реагентом, наприклад, обраним із групи органічних галогенідів (необов'язково заміщених C₁-C₇ алкіл галогенідів, необов'язково заміщених арил C₁-C₇ алкіл галогенідів, необов'язково заміщених гетероциклі C₁-C₇ алкіл галогенідів, необов'язково заміщених арил галогенідів, необов'язково заміщених гетероциклі галогенідів), органічних кислот або їхніх похідних (ангідридів, імідазолідів, галогенангідридів), ефірів органічних сульфокислот або органічних сульфох-

лоридів, органічних галогенформіатів, органічних ізоціанатів і органічних ізотіоціанатамінометилів.

«NH-захисний замісник» означає хімічний радикал, що приєднується до скефолда або напівпродукту синтезу для тимчасового захисту аміногрупи в мультифункціональних сполуках включаючи, але не обмежуючи: амідний замісник, такий як форміл, необов'язково заміщений ацетил (наприклад трихлорацетил, трифторацетил 3-фенілпропіоніл та ін.), необов'язково заміщений бензоїл та ін.; карбаматний замісник такий як необов'язково заміщений C₁-C₇ алкілоксикарбоніл, наприклад, метилоксикарбоніл, етилоксикарбоніл, трет-бутилоксикарбоніл, 9-флуоренілметилоксикарбоніл (Fmoc) та ін.; необов'язково заміщений C₁-C₇ алкільний замісник, наприклад, трет-бутил, бензил, 2,4-диметоксибензил, 9-фенілфлуореніл та ін.; сульфонільний замісник, наприклад, бензолсульфоніл, п-толуолсульфоніл та ін. Більш докладно «NH-захисні замісники» описані в книзі: [Protective groups in organic synthesis, Third Edition Greene, T.W. and Wuts, P.G.M. 1999, p.494-653. Видавництво John Wiley & Sons, Inc., New York, Chichester, Weinheim, Brisbane, Toronto, Singapore].

«Інертний замісник» (або «не заважаючий», "Non-interfering substituent") означає низько- або нереакційноздатний радикал включаючи, але не обмежуючи C₁-C₇алкіл, C₂-C₇алкеніл, C₂-C₇алкініл, C₁-C₇алкокси, C₇-C₁₂аралкіл, заміщений інертними замісниками аралкіл, C₇-C₁₂гетероцикліалкіл, заміщений інертними замісниками гетероцикліалкіл, C₇-C₁₂алкарил, C₃-C₁₀дицклоалкіл, C₃-C₁₀циклоалкеніл, феніл, заміщений феніл, толуїл, ксиленіл, біфеніл, C₂-C₁₂алкоксиалкіл, C₂-C₁₀алкілсульфініл, C₂-C₁₀алкілсульфоніл, (CH₂)_m-O-(C₁-C₇алкіл), -(CH₂)_m-N(C₁-C₇алкіл)_n, арил, заміщений інертними замісниками арил, заміщений інертними замісниками алкокси, фторалкіл, арилоксиалкіл, гетероцикліл, заміщений інертними замісниками гетероцикліл і нітроалкіл; де m і n приймають значення від 1 до 7. Кращими «інертними замісниками» є C₁-C₇алкіл, C₂-C₇алкеніл, C₂-C₇алкініл, C₁-C₇алкокси, C₇-C₁₂аралкіл, C₇-C₁₂алкарил, C₃-C₁₀циклоалкіл, C₃-C₁₀циклоалкеніл, заміщений інертними замісниками C₁-C₇алкіл, феніл, заміщений інертними замісниками феніл, (CH₂)_m-O-(C₁-C₇алкіл), -(CH₂)_m-N(C₁-C₇алкіл)_n, арил, заміщений інертними замісниками арил, гетероцикліл і заміщений інертними замісниками гетероцикліл.

«Арил» означає один або більше ароматичних циклів, кожен з яких містить 5 або 6 атомів вуглецю. «Арил» може бути конденсованим поліциклом, наприклад, як нафталін або неконденсованим, наприклад, як біфеніл. «Заміщений арил» має один або декілька замісників.

«Галоген» означає атом фтору, хлору, броду або йоду.

«Гетероцикл» означає один або декілька насичених, ненасичених або ароматичних циклів з 5, 6 або 7 атомами, принаймні, один із яких є гетероатомом. Переважними гетероатомами є сірка, кисень і азот. «Гетероцикл» може бути конденсованим поліциклом, наприклад, як бензimidазол, бензоксазол, бензтіазол, хінолін або неконденсо-

ваним, наприклад, як біпіридил.

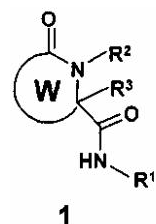
«Азогетероцикл» означає гетероцикл, який містить, принаймні, один атом азоту, наприклад, як піперидин, морфолін, пірол, бензimidазол, бензоксазол, бензтіазол, хінолін.

«Заміщений гетероцикл» означає гетероцикл, що має один або декілька замісників.

«Заміщений азогетероцикл» означає азогетероцикл, що має один або декілька замісників.

Метою даного винаходу є нові анеловані карбамоїлазагетероцикли.

Поставлена мета досягається анелованими карбамоїлазагетероциклами загальної формули 1

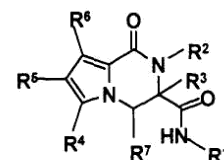


де W являє собою 6-оксопіперазиновий, [1,4]діазепановий, [1,4]тіазепановий або [1,4]оксазепановий цикл, анелований, принаймні, з одним необов'язково заміщеним необов'язково конденсованим гетероциклом Q;

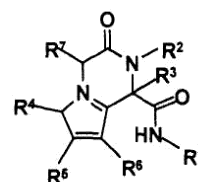
Q являє собою пірольний, піразольний, імідазольний, тіазольний, піролідиновий, індолий, бензофурановий, 4,5,6,7-тетрагідробензотіофеновий, тієно[3,2-b]пірольний, фуру[3,2-b]пірольний, тієно[2,3-b]пірольний, бензimidазольний, піридиновий, хіноліновий або 1,2,3,4-тетрагідроізохіноліновий цикл;

R¹, R² і R³ представляють незалежно один від одного атом водню, інертний замісник, необов'язково заміщений C₁-C₆алкіл, необов'язково заміщений C₃-C₈циклоалкіл, необов'язково заміщений феніл, необов'язково заміщений арил, необов'язково заміщений гетероцикліл;

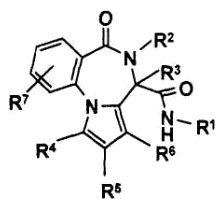
Відповідно до винаходу найкращими анелованими карбамоїлазагетероциклами є заміщені 1-оксо-1,2,3,4-тетрагідропіроло[1,2-a]піразин-3-карбоксаміди загальної формули 1.1, 3-оксо-2,3,4,6-тетрагідро-1H-піроло[1,2-a]піразин-1-карбоксаміди загальної формули 1.2, 6-оксо-5,6-дигідро-4H-бензо[f]піроло[1,2-a][1,4]діазепін-4-карбоксаміди загальної формули 1.3 і 5-оксо-1,3,4,5,6,7,8,9-октагідро-2H-10-тіа-6,9-діаза-бензо[a]-циклопента[e]азулен-7-карбоксаміди загальної формули 1.4



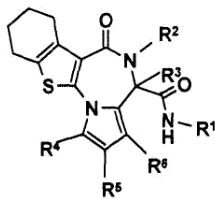
1.1



1.2



1.3



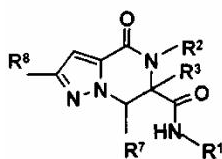
1.4

де: R^1 , R^2 і R^3 мають вищевказане значення;
 R^4 , R^5 і R^6 незалежно один від одного представляють атом водню, інертний замісник, необов'язково заміщений C_1 - C_6 алкіл, необов'язково заміщений C_3 - C_8 циклоалкіл, необов'язково

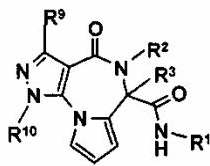
заміщений феніл, необов'язково заміщений арил, необов'язково заміщений гетероциклі;

R^7 представляє атом водню або необов'язково заміщений C_1 - C_6 алкіл.

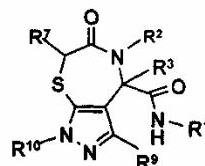
Відповідно до винаходу найкращими анелованими карбоамілазгетероциклами є також заміщені 4-оксо-4,5,6,7-тетрагідропіразоло[1,5-а]піразин-6-карбоксаміди загальної формули 1.5, 4-оксо-1,4,5,6-тетрагідро-1,2,5,9а-тетрааза-циклопента[е]азулен-6-карбоксаміди загальної формули 1.6 і 6-оксо-4,5,6,7-тетрагідро-1Н-8-тіа-1,2,5-тріаза-азулен-4-карбоксаміди загальної формули 1.7



1.5



1.6



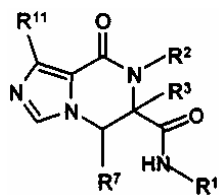
1.7

де: R^1 , R^2 , R^3 , і R^7 мають вищевказане значення;

R^8 і R^9 незалежно один від одного представляють атом водню, карбоксиалкіл, карбокси, необов'язково заміщений карбоаміл;

R^8 , R^9 і R^{10} незалежно один від одного представляють інертний замісник, необов'язково заміщений C_1 - C_6 алкіл, необов'язково заміщений C_3 - C_8 циклоалкіл, необов'язково заміщений феніл, необов'язково заміщений арил, необов'язково заміщений гетероциклі.

Відповідно до винаходу найкращими анелованими карбоамілазгетероциклами є також заміщені 8-оксо-5,6,7,8-тетрагідро-імідазо[1,5-а]піразин-6-карбоксаміди загальної формули 1.8



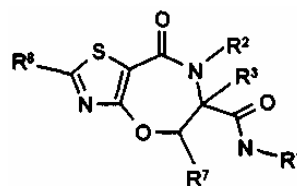
1.8

де: R^1 , R^2 , R^3 і R^7 мають вищевказане значення;

R^{11} являє собою атом водню, карбоксиалкіл,

карбокси, необов'язково заміщений карбоаміл.

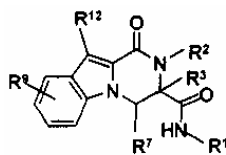
Відповідно до винаходу найкращими анелованими карбоамілазгетероциклами є також заміщені 8-оксо-5,6,7,8-тетрагідро-4-окса-1-тіа-3,7-діаза-азулен-6-карбоксаміди загальної формули 1.9



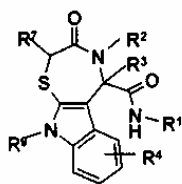
1.9

де: R^1 , R^2 , R^3 , R^7 і R^8 мають вищевказане значення.

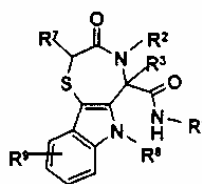
Відповідно до винаходу найкращими анелованими карбоамілазгетероциклами є також заміщені 1-оксо-1,2,3,4-тетрагідропіразино[1,2-а]індол-3-карбоксаміди загальної формули 1.10, 7-оксо-5,7,8,10-тетрагідро-6Н-9-тіа-6,10-діаза-бензо[а]азулен-5-карбоксаміди загальної формули 1.11, 7-оксо-7,8,9,10-тетрагідро-6Н-5-тіа-5,10-діаза-бензо[а]азулен-9-карбоксаміди загальної формули 1.12 і 9-оксо-7,8,9,10-тетрагідро-6Н-5-а-5,10-діаза-бензо[а]азулен-7-карбоксаміди загальної формули 1.13



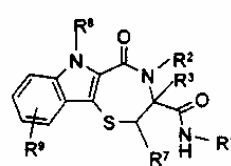
1.10



1.11



1.12

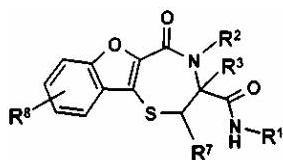


1.13

де: R^1 , R^2 , R^3 , R^7 , R^8 і R^9 мають вищевказане значення.

R^{12} представляє атом водню, інертний замісник, заміщена аміногрупа, пірол-1-іл.

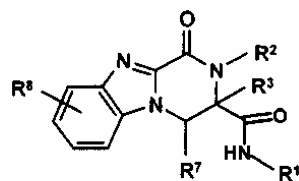
Відповідно до винаходу найкращими анелованими карбамоїлазгетероциклами є також заміщені 9-оксо-6,7,8,9-тетрагідро-10-оксо-5-тіа-8-аза-бензо[а]азулен-7-карбоксаміди загальної формули 1.14



1.14

де: R^1 , R^2 , R^3 , R^7 і R^8 мають вищевказане значення.

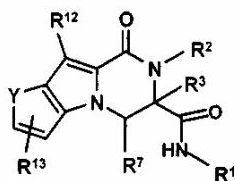
Відповідно до винаходу найкращими анелованими карбамоїлазгетероциклами є також заміщені 1-оксо-1,2,3,4-тетрагідро-бензо[4,5]імідазо[1,2-а]піразин-3-карбоксаміди загальної формули 1.15



1.15

де: R^1 , R^2 , R^3 , R^7 і R^8 мають вищевказане значення.

Відповідно до винаходу найкращими анелованими карбамоїлазгетероциклами є також заміщені 7-оксо-4,5,6,7-тетрагідро-1-тіа-3b,6-діаза-циклопента[а]інден-5-карбоксаміди загальної формули 1.16 і 7-оксо-4,5,6,7-тетрагідро-1-оксо-3b,6-діаза-циклопента[а]інден-5-карбоксаміди загальної формули 1.17

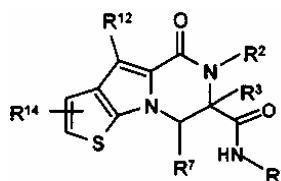


1.16 (Y=S), 1.17 (Y=O)

де: R^1 , R^2 , R^3 , R^7 і R^{12} мають вищевказане значення.

R^{13} представляє атом водню або необов'язково заміщений C_{1-6} алкіл.

Відповідно до винаходу найкращими анелованими карбамоїлазгетероциклами є також заміщені 7-оксо-4,5,6,7-тетрагідро-3-тіа-3b,6-діаза-циклопента[а]інден-5-карбоксаміди загальної формули 1.18

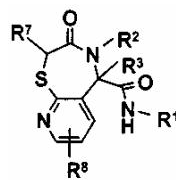


1.18

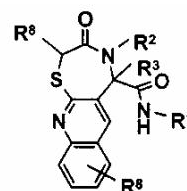
де: R^1 , R^2 , R^3 , R^7 і R^{12} мають вищевказане значення;

R^{14} представляє атом водню або необов'язково заміщений C_{1-6} алкіл.

Відповідно до винаходу найкращими анелованими карбамоїлазгетероциклами є також заміщені 7-оксо-5,6,7,8-тетрагідро-9-тіа-1,6-діаза-бензоциклопента-5-карбоксаміди загальної формули 1.19 і 8-оксо-7,8,9,10-тетрагідро-6-тіа-5,9-діаза-циклопента[б]нафталін-10-карбоксаміди загальної формули 1.20



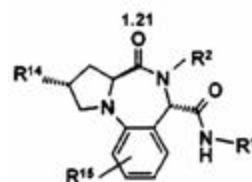
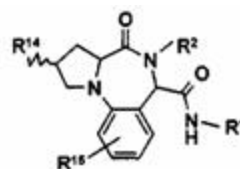
1.19



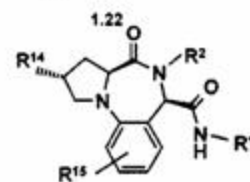
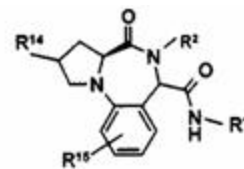
1.20

де: R^1 , R^2 , R^3 , R^7 і R^8 мають вищевказане значення.

Відповідно до винаходу найкращими анелованими карбамоїлазгетероциклами є також заміщені 4-оксо-2,3,3a,4,5,6-гексагідро-1H-бензо[ф]піроло[1,2-a][1,4]діазепін-6-карбоксаміди загальної формули 1.21, (3a)-4-оксо-2,3,3a,4,5,6-гексагідро-1H-бензо[ф]піроло[1,2-a][1,4]діазепін-6-карбоксаміди загальної формули 1.22 (3a,6S)-4-оксо-2,3,3a,4,5,6-гексагідро-1H-бензо[ф]піроло[1,2-a][1,4]діазепін-6-карбоксаміди загальної формули 1.22a і (3a,6R)-4-оксо-2,3,3a,4,5,6-гексагідро-1H-бензо[ф]піроло[1,2-a][1,4]діазепін-6-карбоксаміди загальної формули 1.22b



1.22a



1.22b

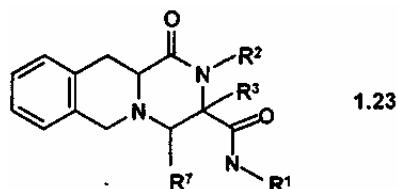
де: R^1 і R^2 мають вищевказане значення;

R^{14} являє собою атом водню або необов'язково заміщену гідрокси групу;

R^{15} атом водню, NO_2 , CF_3 , CN , карбоксиалкіл,

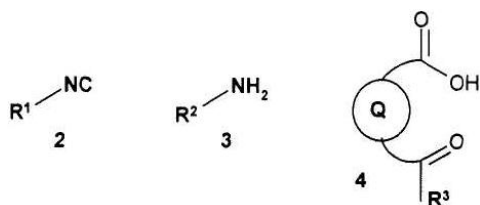
карбокси, необов'язково заміщений карбамоїл, необов'язково заміщена аміногрупа.

Відповідно до винаходу найкращими анелованими карбамоїлазгетероциклами є також заміщені 1-оксо-1,3,4,6,11,11а-гексагідро-2H-піразино[1,2-b]ізохінолін-3-карбоксаміди загальної формули 1.23



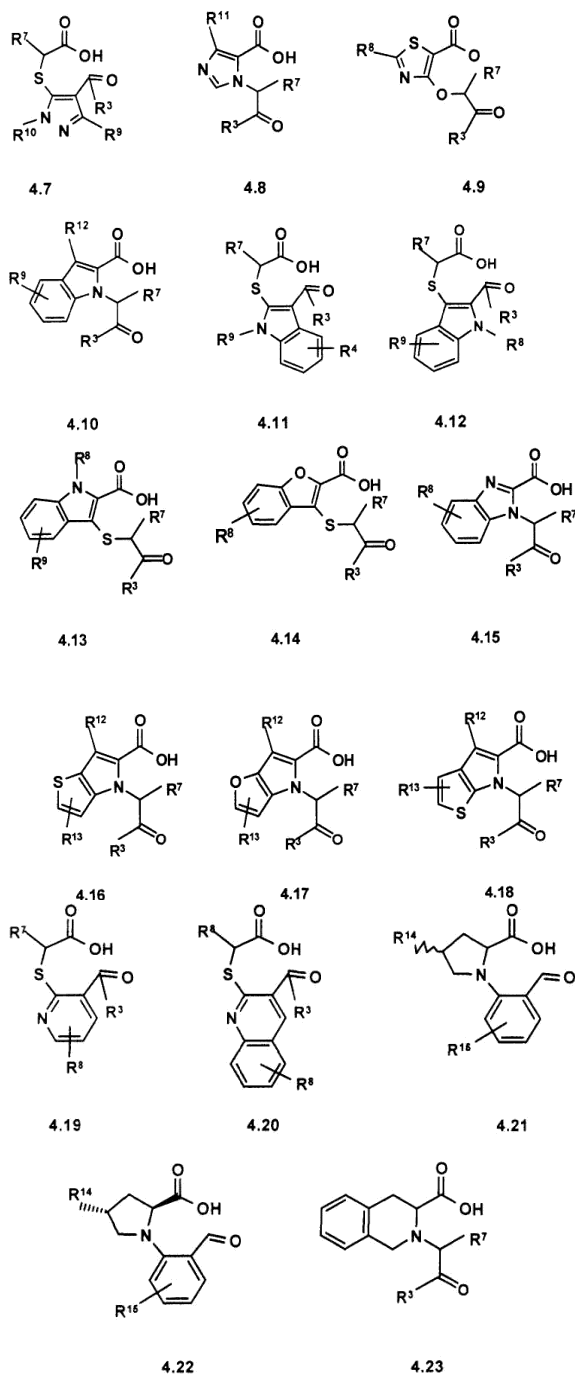
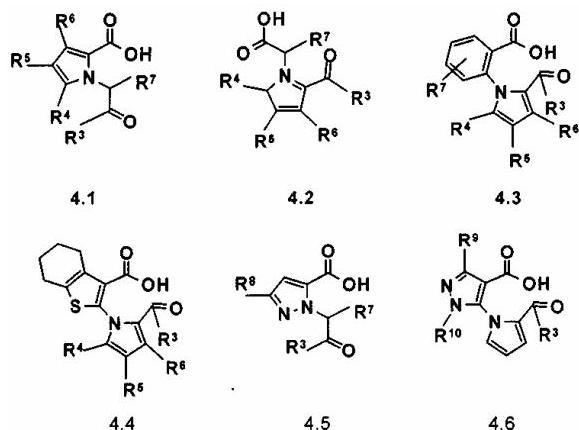
де R^1 , R^2 , R^3 і R^7 мають вищевказане значення.

Метою даного винаходу є спосіб одержання нових анелованих карбамоїлазгетероциклів загальної формули 1.



Поставлена мета досягається способом одержання нових анелованих карбамоїлазгетероциклів загальної формули 1 шляхом трикомпонентної конденсації відповідного ізонітрила загальної формули 2, відповідного первинного аміну загальної формули 3 і відповідного гетероциклічного біфункціонального реагента загальної формули 4 де: Q, R^1 , R^2 і R^3 мають вищевказане значення.

Відповідно до винаходу кращими біфункціональними реагентами 4 є гетероциклічні реагенти, що містять карбоксильну і карбонільну групи загальної формули 4.01-4.23



де R^3 - R^{15} мають вищевказане значення.

Метою даного винаходу також є нова фокусована бібліотека для визначення сполук-лідерів.

Поставлена мета досягається фокусованою бібліотекою для визначення сполук-лідерів, яка містить, принаймні, одну анеловану карбамоїлазгетероциклічну сполуку загальної формули 1 за п.1.

Метою даного винаходу також є нова фармацевтична композиція, яка має антиканцерну активність.

Поставлена мета досягається фармацевтичною композицією, яка має антиканцерну активність, яка містить, принаймні, одну анеловану карбамоїлазгетероциклічну сполуку загальної

формули 1 або їхню фармацевтично прийнятну сіль.

Нижче винахід описується за допомогою прикладів, що ілюструють, але не обмежують даний винахід.

Приклад 1. Загальний спосіб одержання анелованих карбамоїлазгетероциклічних сполук загальної формули 1. Перемішували при кімнатній температурі протягом 48-56 годин суміш 3ммол відповідного ізонітрилу загальної формули 2, 3ммол відповідного первинного аміну загальної формули 3 і 3,1ммол відповідного гетероциклічного біфункціонального реагенту загальної формули 4 у 5мл сухого метанолу або іншого необхідного розчинника. Осад, що утворився, відфільтровували, у разі потреби перекристалізовували з необхідного розчинника. Одержували сполуку 1 у вигляді суміші енантіомерів з виходом 40-95% (таблиці 1.01-1.23). У разі потреби сполуку 1 піддавали хроматографічному поділу на оптичні ізомери (таблиця 1.21-22).

Таблиця 1.01(1). 1-оксо-6-(2-фурил)-1,2,3,4-тетрагідропіроло[1,2-а]піразин-3-карбоксаміди загальної формули 1.1;

Заміщені 1-оксо-6-(2-фурил)-1,2,3,4-тетрагідропіроло[1,2-а]піразин-3-карбоксаміди загальної формули 1.1.

Таблиця 1.01(2). Заміщені 1-оксо-6-(2-феніл)-1,2,3,4-тетрагідропіроло[1,2-а]піразин-3-карбоксаміди загальної формули 1.1.

Таблиця 1.02. Заміщені 3-оксо-1,2,3,4-тетрагідропіразино[1,2-а]індол-1-карбоксаміди загальної формули 1.1.

Таблиця 1.03. Заміщені 6-оксо-5,6-дигідро-4Н-бензо[і]піроло[1,2-а][1,4]діазепін-4-карбоксаміди загальної формули 1.3.

Таблиця 1.04. Заміщені 5-оксо-1,3,4,5,6,7,8,9-октагідро-2Н-10-тіа-6,9-діаза-бензо[а]-циклопента[е]азулен-7-карбоксаміди загальної формули 1.4.

Таблиця 1.05(1). Заміщені 5-арил-2-трет-бутил-4-оксо-4,5,6,7-тетрагідропіразоло[1,5-а]піразин-6-карбоксаміди загальної формули 1.5.

Таблиця 1.05(2). Заміщені 5-бензил-2-трет-бутил-4-оксо-4,5,6,7-тетрагідропіразоло[1,5-а]піразин-6-карбоксаміди загальної формули 1.5.

Таблиця 1.05(3). Заміщені 2-арил-4-оксо-4,5,6,7-тетрагідропіразоло[1,5-а]піразин-6-карбоксаміди загальної формули 1.5.

Таблиця 1.05(4). Заміщені 4-оксо-2-(2-фурил)-4,5,6,7-тетрагідропіразоло[1,5-а]піразин-6-карбоксаміди загальної формули 1.5.

Таблиця 1.05(5). Заміщені 2-карбоксиалкіл-4-оксо-4,5,6,7-тетрагідропіразоло[1,5-а]піразин-6-карбоксаміди загальної формули 1.5.

Таблиця 1.05(6). Заміщені 2-карбамино-4-оксо-4,5,6,7-тетрагідропіразоло[1,5-а]піразин-6-карбоксаміди загальної формули 1.5.

Таблиця 1.06. Заміщені 4-оксо-1,4,5,6-тетрагідро-1,2,5,9а-тетрааза-циклопента[е]азулен-6-карбоксаміди загальної формули 1.6.

Таблиця 1.07. Заміщені 6-оксо-4,5,6,7-тетрагідро-1Н-8-тіа-7,2,5-триаза-азулен-4-карбоксаміди загальної формули 1.7.

Таблиця 1.08. Заміщені 8-оксо-5,6,7,8-тетрагідроімідазо[1,5-а]піразин-6-карбоксаміди

загальної формули 1.8.

Таблиця 1.09. Заміщені 8-оксо-5,6,7,8-тетрагідро-4-окса-1-тіа-3,7-діаза-азулен-6-карбоксаміди загальної формули 1.9.

Таблиця 1.10(1). Заміщені 7-метокси- і 6,9-диметокси-1-оксо-1,2,3,4-тетрагідропіразино[1,2-а]індол-3-карбоксаміди загальної формули 1.10.

Таблиця 1.10(2). Заміщені 10-ацетиламіно-1-оксо-1,2,3,4-тетрагідропіразино[1,2-а]індол-3-карбоксаміди загальної формули 1.10.

Таблиця 1.10(3). Заміщені 1-оксо-10-пірол-1-ил)-1,2,3,4-тетрагідропіразино[1,2-а]індол-3-карбоксаміди загальної формули 1.10.

Таблиця 1.11. Заміщені 7-оксо-5,7,8,10-тетрагідро-6Н-9-тіа-6,10-діаза-бензо[а]азулен-5-карбоксаміди загальної формули 1.11.

Таблиця 1.12. Заміщені 7-оксо-7,8,9,10-тетрагідро-6Н-5-тіа-5,10-діаза-бензо[а]азулен-9-карбоксаміди загальної формули 1.12.

Таблиця 1.13. Заміщені 9-оксо-7,8,9,10-тетрагідро-6Н-5-тіа-5,10-діаза-бензо[а]азулен-7-карбоксаміди загальної формули 1.13.

Таблиця 1.14. Заміщені 9-оксо-6,7,8,9-тетрагідро-10-окса-5-тіа-8-аза-бензо[а]азулен-7-карбоксаміди загальної формули 1.14.

Таблиця 1.15. Заміщені 1-оксо-1,2,3,4-тетрагідро-бензо[4,5]імідазо[1,2-а]піразин-3-карбоксаміди загальної формули 1.15.

Таблиця 1.16(1). Заміщені 6-алкіл- і 6-циклоалкіл-7-оксо-4,5,6,7-тетрагідро-1-тіа-3b,6-діаза-циклопента[а]інден-5-карбоксаміди загальної формули 1.16.

Таблиця 1.16(2). Заміщені 6-арил-7-оксо-4,5,6,7-тетрагідро-1-тіа-3b,6-діаза-циклопента[а]інден-5-карбоксаміди загальної формули 1.16.

Таблиця 1.16(3). Заміщені 6-бензил-7-оксо-4,5,6,7-тетрагідро-1-тіа-3b,6-діаза-циклопента[а]інден-5-карбоксаміди загальної формули 1.16.

Таблиця 1.16(4). Заміщені 6-(2-гідроксиетил)- і 6-(2-аміноетил)-7-оксо-4,5,6,7-тетрагідро-1-тіа-3b,6-діаза-циклопента[а]інден-5-карбоксаміди загальної формули 1.16.

Таблиця 1.16(5). Заміщені 6-(3-гідроксипропіл)- і 6-(3-амінопропіл)-7-оксо-4,5,6,7-тетрагідро-1-тіа-3b,6-діаза-циклопента[а]інден-5-карбоксаміди загальної формули 1.16.

Таблиця 1.16(6). Заміщені 7-оксо-5-феніл-4,5,6,7-тетрагідро-1-тіа-3b,6-діаза-циклопента[а]інден-5-карбоксаміди загальної формули 1.16.

Таблиця 1.17(1). Заміщені 6-алкіл- і 6-циклоалкіл-7-оксо-4,5,6,7-тетрагідро-1-окса-3b,6-діаза-циклопента[а]інден-5-карбоксаміди загальної формули 1.17.

Таблиця 1.17(2). Заміщені 6-арил-7-оксо-4,5,6,7-тетрагідро-1-окса-3b,6-діаза-циклопента[а]інден-5-карбоксаміди загальної формули 1.17.

Таблиця 1.17(3). Заміщені 6-бензил-7-оксо-4,5,6,7-тетрагідро-1-окса-3b,6-діаза-циклопента[а]інден-5-карбоксаміди загальної формули 1.17.

Таблиця 1.17(4). Заміщені 6-(2-гідроксиетил)- і 6-(2-аміноетил)-7-оксо-4,5,6,7-тетрагідро-1-окса-

3b,6-діаза-циклопента[а]інден-5-карбоксаміди загальної формули 1.17

Таблиця 1.17(5). Заміщені 6-(3-гідроксипропіл)- і 6-(3-амінопропіл)-7-оксо-4,5,6,7-тетрагідро-1-окса-3b,6-діаза-циклопента[а]інден-5-карбоксаміди загальної формули 1.17

Таблиця 1.17(6). Заміщені 7-оксо-5-феніл-4,5,6,7-тетрагідро-1-окса-3b,6-діаза-циклопента[а]інден-5-карбоксаміди загальної формули 1.17

Таблиця 1.18. Заміщені 7-оксо-4,5,6,7-тетрагідро-3-тіа-3b,6-діаза-циклопента[а]інден-5-карбоксаміди загальної формули 1.18.

Таблиця 1.19-20. Заміщені 7-оксо-5,6,7,8-тетрагідро-9-тіа-1,6-діаза-бензоциклопептан-5-карбоксаміди загальної формули 1.19 і 8-оксо-7,8,9,10-тетрагідро-6-тіа-5,9-діаза-циклопента[б]нафталін-10-карбоксаміди загальної формули 1.20.

Таблиця 1.21-22. Заміщені 4-оксо-2,3,3a,4,5,6-гексагідро-1H-бензо[ф]піроло[1,2-a][1,4]діазепін-6-карбоксаміди загальної формули 1.21, 1.22.

Таблиця 1.23. Заміщені 1-оксо-1,3,4,6,11,11a-гексагідро-2H-піразино[1,2-b]ізохінолін-3-карбоксаміди загальної формули 1.23.

Приклад 2. Випробування біологічної активності сполук загальної формули 1. Склали фокусовану бібліотеку, що містить сполуки загальної формули 1, представлені в таблицях 1.01-1.23, і випробували її на антиканцерну активність. Антиканцерна активність сполук визначалася за їх здатністю вбивати канцерні клітини в культурі тканини. Для цієї мети були обрані три клітинні лінії, що представляють три типи ракових пухлин: DLD-1 (аденокарцинома прямої кишки), DU-145 (карцинома мозку) і T-47D (пухлина молочної залози). Усі клітинні культури були отримані з Американської колекції тканинних культур (ATCC). Оцінка ефективності сполук провадилася шляхом вимірювання кількості мертвих клітин після їх обробки досліджуваними речовинами протягом 48 годин. Клітини засівалися при концентрації $5 \cdot 10^3$ клітин/лунку стандартної 96-лункової плати й залишалися на ніч для прикріплення клітин до дна лунок. Після цього, до клітин додавали досліджувані речовини в кінцевій концентрації $30 \mu\text{M}$ і плати залишали на 48 годин в інкубаторі при 37°C підтримуючому $5\% \text{CO}_2/95\%$ повітряне середовище при 100% вологості. Наприкінці експерименту, середовище зі сполуками відсмоктували з усіх лунок і лунки двічі промивалися фізіологічним розчином. У кожному лунку додавали $50 \mu\text{M}$ розчин Alamar Blue і вимірювали флуоресценцію ($\lambda_{\text{ex}}=531\text{nm}$, $\lambda_{\text{em}}=589\text{nm}$) відразу після його додавання і через 2 години. Швидкість приросту флуоресценції пропорційна

числу клітин, що залишилися живими після їхньої інкубації з досліджуваними речовинами [John O'Brien, Ian Wilson, Terry Orton and Francois Pognan, Investigation of the Alamar Blue (resazurin) fluorescent dye for the assessment of mammalian cell cytotoxicity. *Eur. J. Biochem.* 2000, 6 267, 5421-5426]. Відсоток придушення росту клітин визначався за наступним рівнянням

$$\% \text{Інгібування росту} = ((\Delta F_k - \Delta F_i) / \Delta F_i) \cdot 100\%,$$

де ΔF означає приріст флуоресценції за дві години після додавання розчину Alamar Blue і порядкові індекси k та i означають, відповідно, контрольні (вирощені без яких-небудь речовин) і дослідні (вирощені в присутності дослідних речовин) клітини. Дані для деяких з досліджуваних речовин наведені в таблиці 1.24. З даних, наведених у таблиці 1.24, можна бачити, що досліджувані речовини показують високу активність у придушенні росту пухлинних клітин. При цьому такі речовини як 1.5(3){44}, 1.5(3){50}, 1.10 (1){18}, і 1.16 (2){28}, однаково добре придушують ріст клітин усіх трьох ракових пухлин, тоді як інші мають той або інший ступінь селективності стосовно різних пухлин.

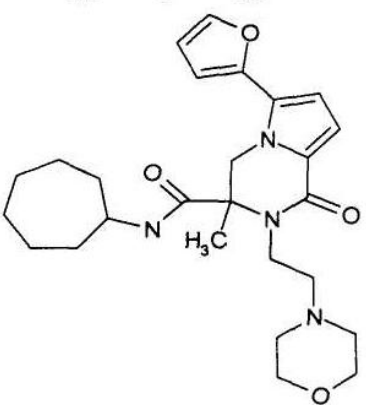
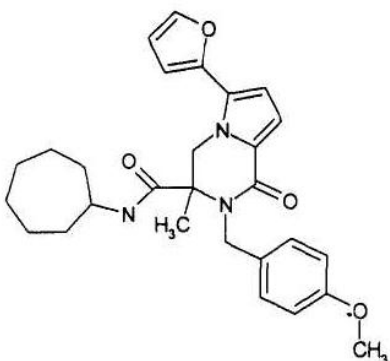
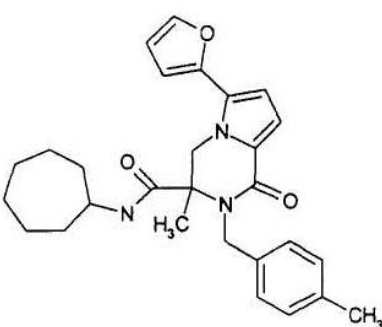
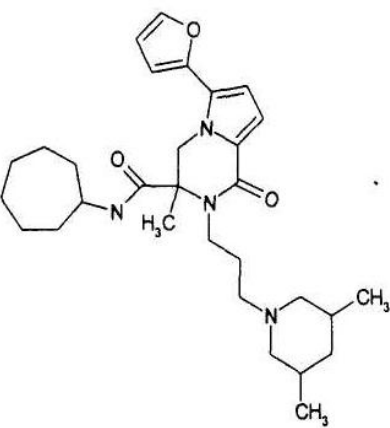
Приклад 3. Спосіб одержання фармацевтичної композиції у формі таблеток. Змішують 800мг крохмалю, 800мг подрібненої лактози 200мг тальку і 500мг циклогексиламід 6-метил-4-оксо-5-(2-піролідин-1-іл-етил)-2-(4-етилфеніл)-4,5,6,7-тетрагідропіразоло[1,5-a]піразин-6-карбонової кислоти 1.5(3){50} і спресовують у брусок. Отриманий брусок подрібнюють у гранули і просівають через сита, збираючи гранули розміром 14-16 меш. Отримані гранули таблетують в необхідну форму таблеток вагою 280мг кожна. Аналогічним чином одержують фармацевтичні композиції у вигляді таблеток, що містять у якості активного інгредієнта інші 1,3-діоксо-2,3-дигідро-1-піроло[3,4-c]хіноліни загальної формули 1.

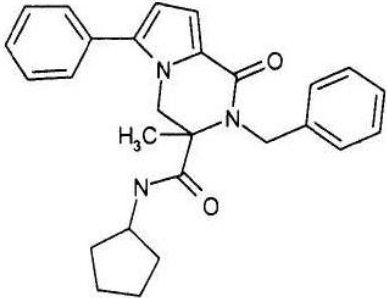
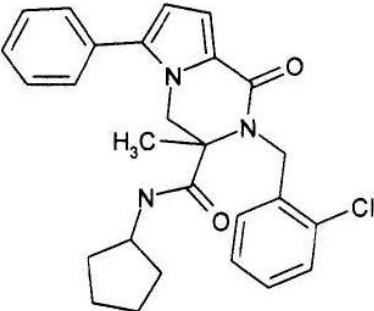
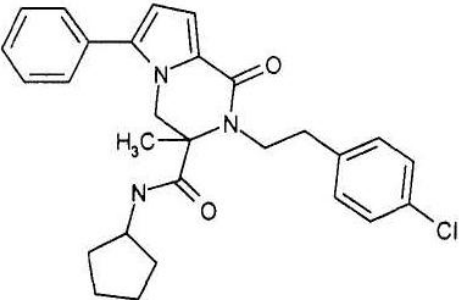
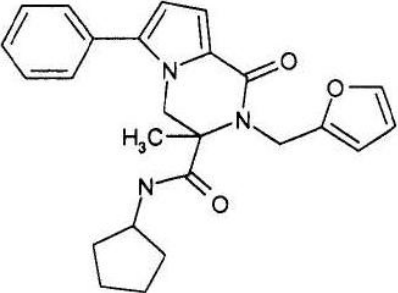
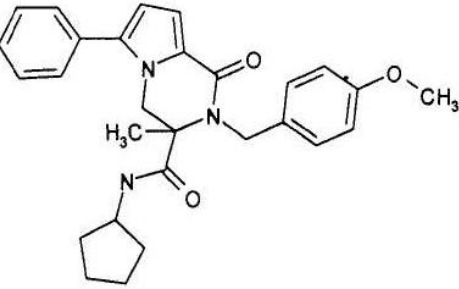
Приклад 4. Спосіб одержання фармацевтичної композиції у формі капсул. Ретельно змішують сполуки 1.5(3){50} з порошком лактози в співвідношенні 2:1. Отриману порошкоподібну суміш упаковують по 300мг у желатинові капсули необхідного розміру.

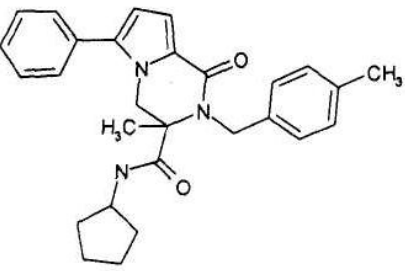
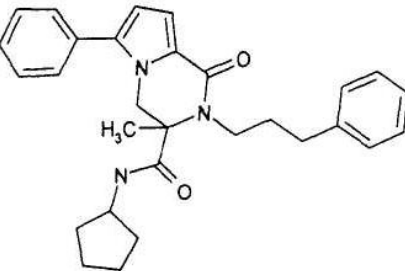
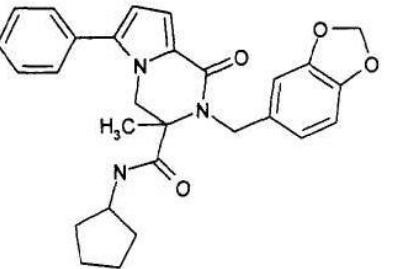
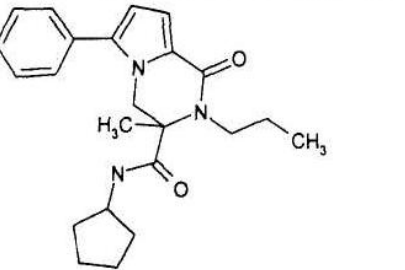
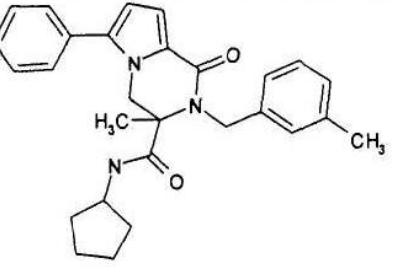
Приклад 5. Спосіб одержання фармацевтичної композиції у формі ін'єкцій для внутрішньом'язових, внутрішньочеревинних або підшкірних ін'єкцій. Змішують 500мг гідрохлориду сполуки 1.5(3){50}, з 300мг хлорбутанола, 2мол пропіленгліколю і 100мл ін'єкційної води. Отриманий розчин фільтрують і поміщають по 1мл в ампули, що запаюють і стерилізують в автоклаві.

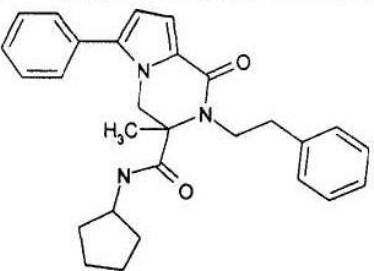
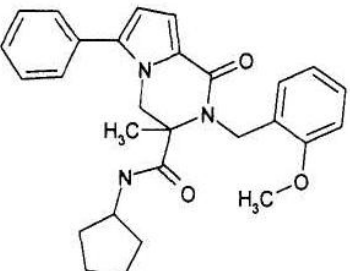
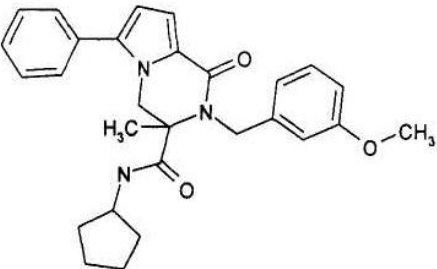
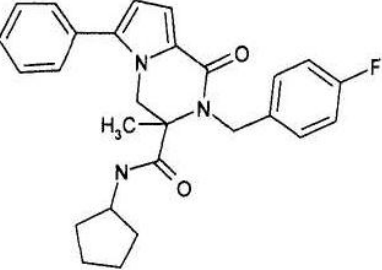
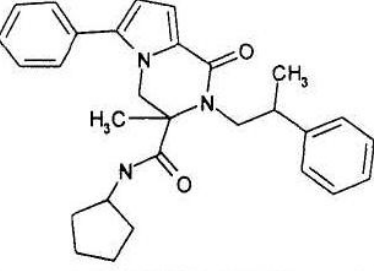
Винахід може бути використаний в медицині, ветеринарії, біохімії, загальній хімії.

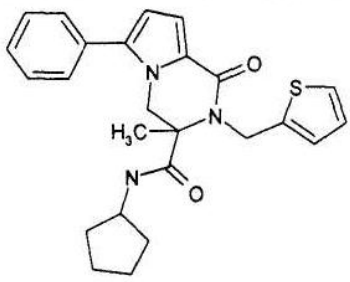
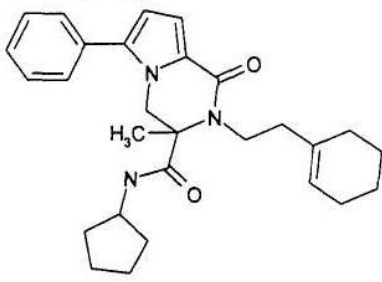
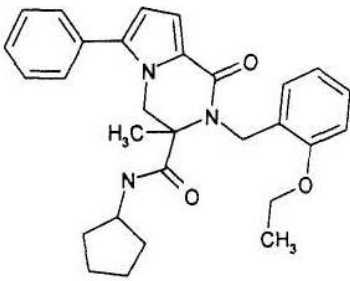
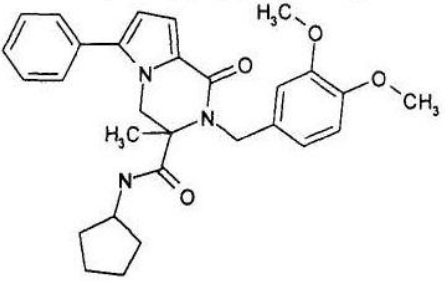
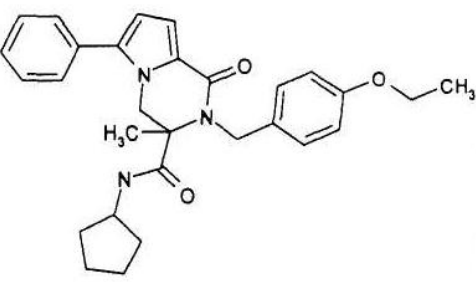
Таблица 1.01(1)

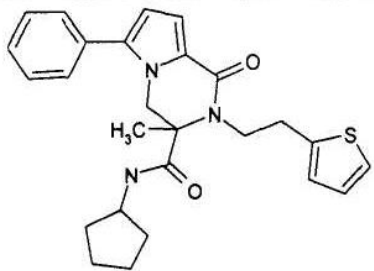
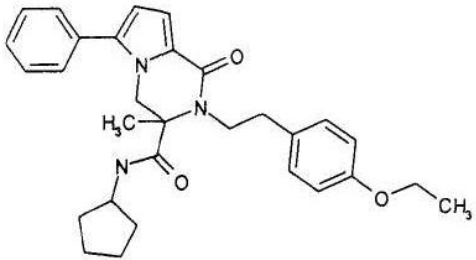
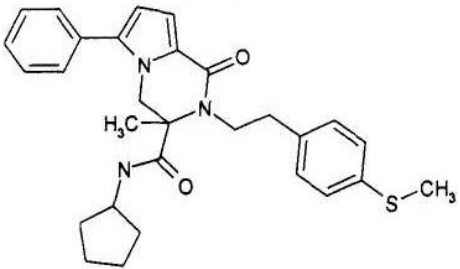
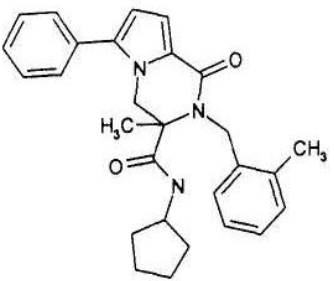
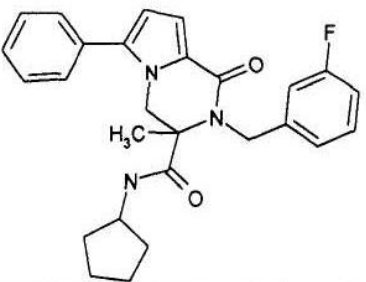
| № п.п. | Формула | Мол.масса | Мас-спектр, m/z | ПМР спектр |
|--------|---|-----------|-----------------|--|
| 1 |  | 468,60122 | 469 | m 1 27-1 71 (15H, CH and CH ₃ of alkyl), m 2 35-2 62 (6H, CH of alkyl), m 3 50-3 71 (7H, CH of alkyl and CH of cycloheptyl), dd 4 00, 4 87 (J=12 7Hz, 2H, CH ₂ of cycle), d 6 37 (J=4 0Hz, 1H, CH of furan ring), br s 6 52 (1H, CH of pyrrol ring), |
| 2 |  | 475,59291 | 476 | 0 89 (10, 6H, m), 1 05 - 1 45 (8, 9 14, 5H, m), 1 45 (4, 3H, s), 1 50 - 1 91, 2 50 - 2 89, 3 05 - 3 28 (7, 11, 12, 13, 11H, m m), 3 95 + 4 41 (3, 2H, AB, 12 4 Hz), 6 45 (2, 1H, d, 1 4 Hz), 6 52 (5, 1H, s), 7 42 (1, 1H, d, 1 4 Hz), 8 15 (6, 1H |
| 3 |  | 459,59351 | 460 | |
| 4 |  | 508,71018 | 509 | |

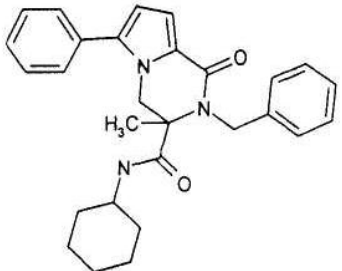
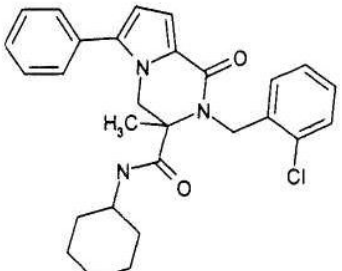
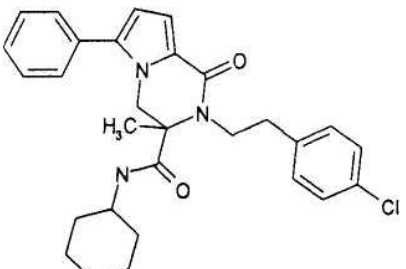
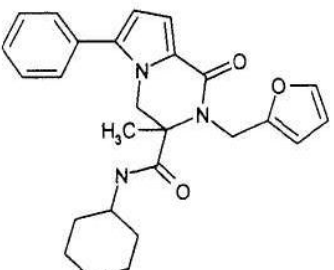
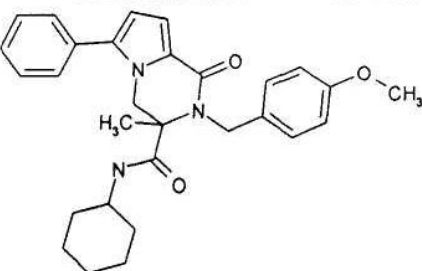
| Таблица 1.01(2) | | | |
|-----------------|---|-----------|------------------------|
| № п.п. | Формула | Мол.масса | Мас -спектр, m/z (M+1) |
| 1 |  | 427,55108 | 428 |
| 2 |  | 461,99611 | 462 |
| 3 |  | 476,0232 | 477 |
| 4 |  | 417,51224 | 418 |
| 5 |  | 457,57757 | 458 |

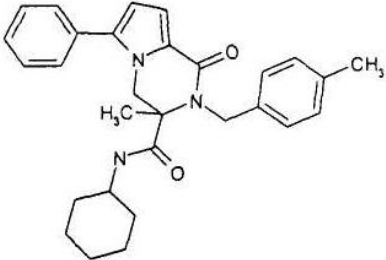
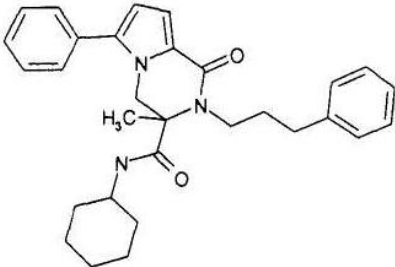
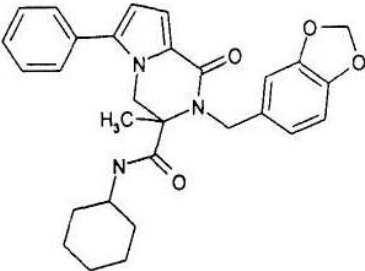
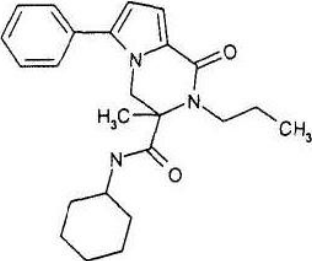
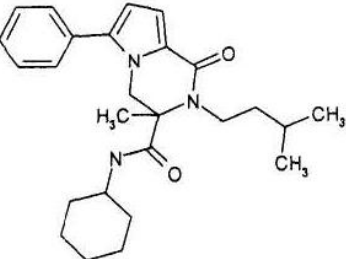
| | | | |
|----|---|-----------|-----|
| 6 |  | 441,57817 | 442 |
| 7 |  | 455,60526 | 456 |
| 8 |  | 471,56103 | 472 |
| 9 |  | 379,50648 | 380 |
| 10 |  | 441,57817 | 442 |

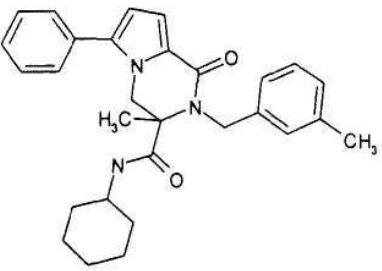
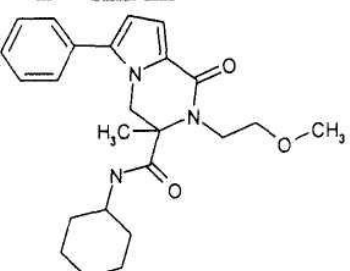
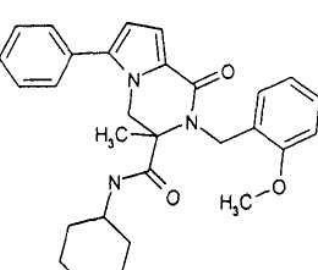
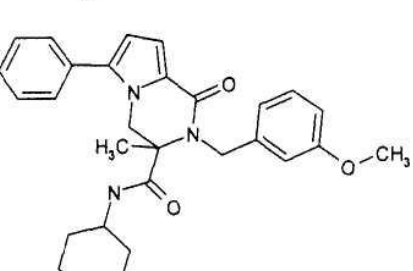
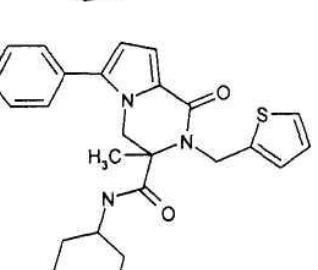
| | | | |
|----|---|-----------|-----|
| 11 |  | 441,57817 | 442 |
| 12 |  | 457,57757 | 458 |
| 13 |  | 457,57757 | 458 |
| 14 |  | 445,54151 | 446 |
| 15 |  | 455,60526 | 456 |

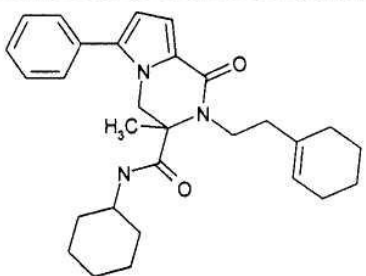
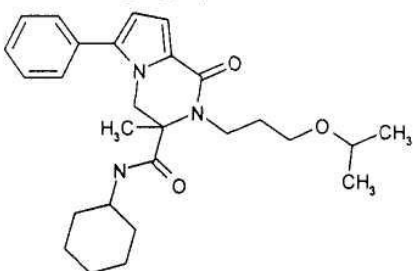
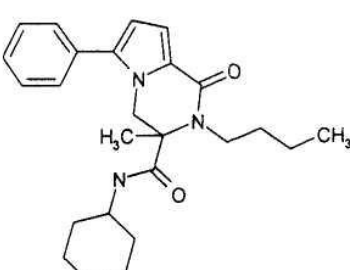
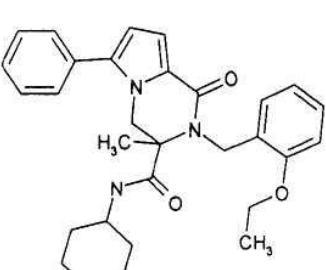
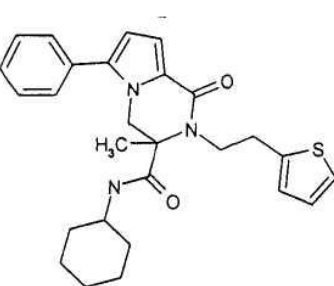
| | | | |
|----|---|-----------|-----|
| 16 |  | 433,57684 | 434 |
| 17 |  | 445,61005 | 446 |
| 18 |  | 471,60466 | 472 |
| 19 |  | 487,60406 | 488 |
| 20 |  | 471,60466 | 472 |

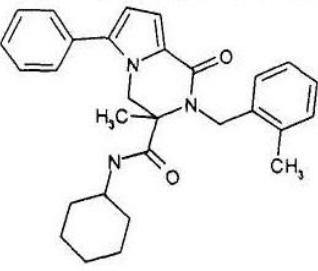
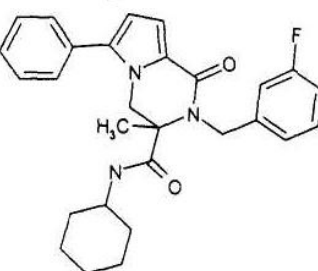
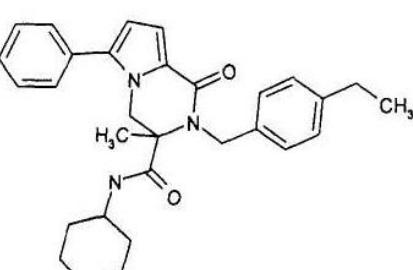
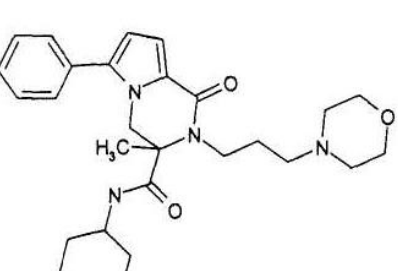
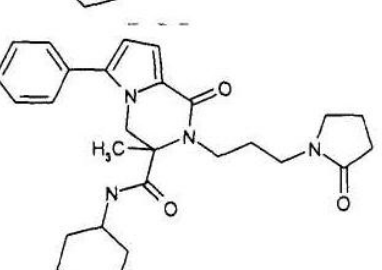
| | | | |
|----|---|-----------|-----|
| 21 |  | 447,60393 | 448 |
| 22 |  | 485,63175 | 486 |
| 23 |  | 487,66926 | 488 |
| 24 |  | 441,57817 | 442 |
| 25 |  | 445,54151 | 446 |

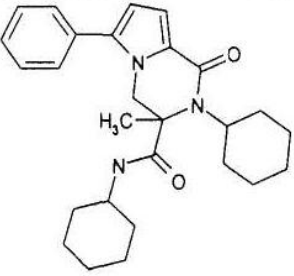
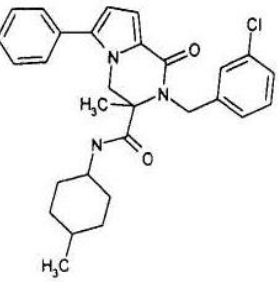
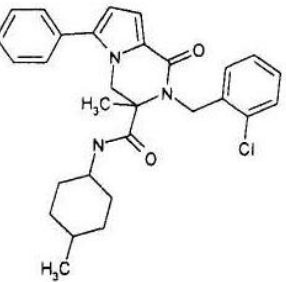
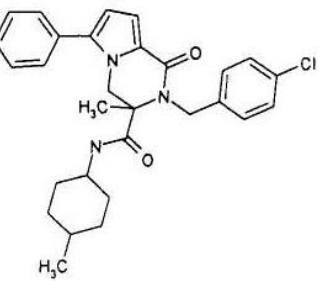
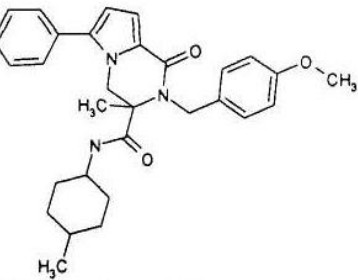
| | | | |
|----|---|-----------|-----|
| 26 |  | 441,57817 | 442 |
| 27 |  | 476,0232 | 477 |
| 28 |  | 490,05029 | 491 |
| 29 |  | 431,53933 | 432 |
| 30 |  | 471,60466 | 472 |

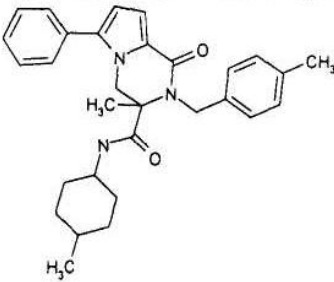
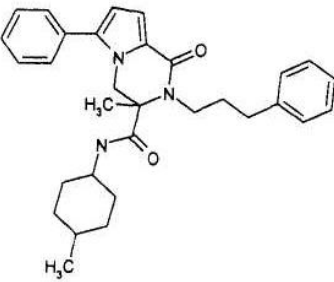
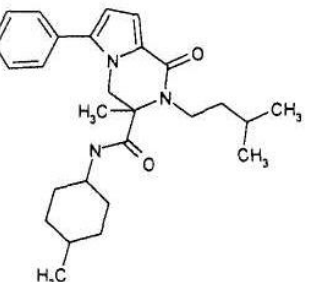
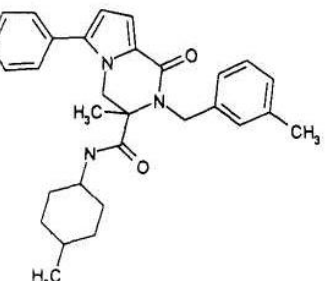
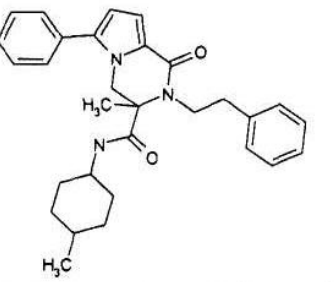
| | | | |
|----|---|-----------|-----|
| 31 |  | 455,60526 | 456 |
| 32 |  | 469,63235 | 470 |
| 33 |  | 485,58812 | 486 |
| 34 |  | 393,53357 | 394 |
| 35 |  | 421,58775 | 422 |

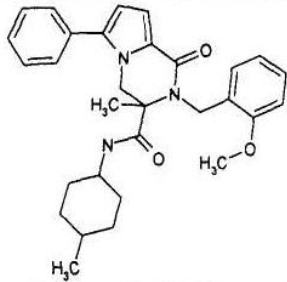
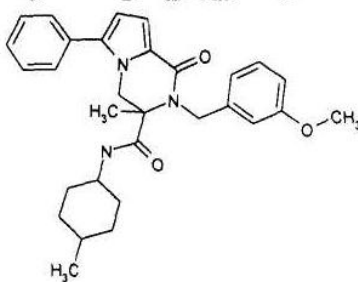
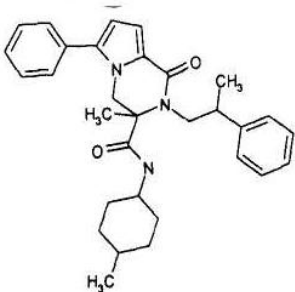
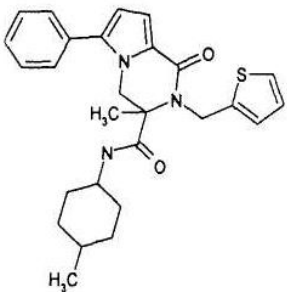
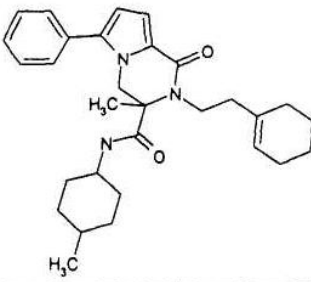
| | | | |
|----|---|-----------|-----|
| 36 |  | 455,60526 | 456 |
| 37 |  | 409,53297 | 410 |
| 38 |  | 471,60466 | 472 |
| 39 |  | 471,60466 | 472 |
| 40 |  | 447,60393 | 448 |

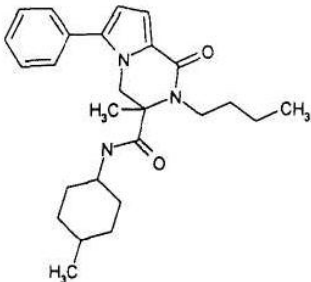
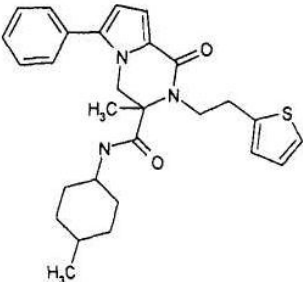
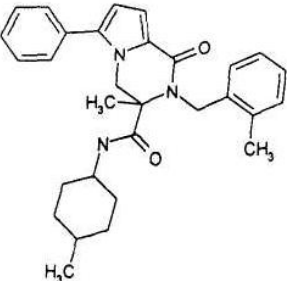
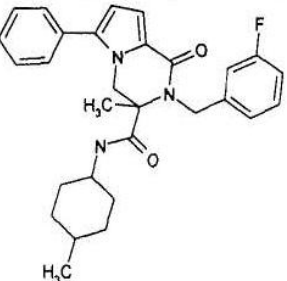
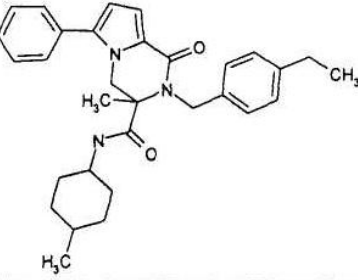
| | | | |
|----|---|-----------|-----|
| 41 |  | 459,63714 | 460 |
| 42 |  | 451,61424 | 452 |
| 43 |  | 407,56066 | 408 |
| 44 |  | 485,63175 | 486 |
| 45 |  | 461,63102 | 462 |

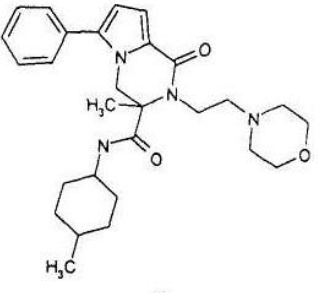
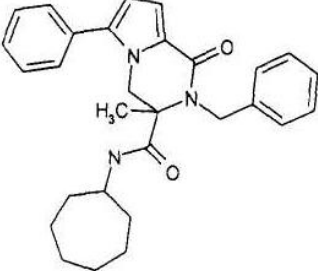
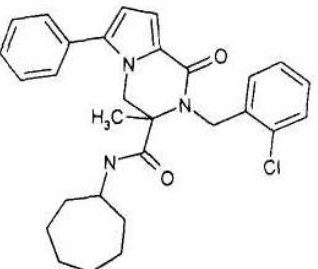

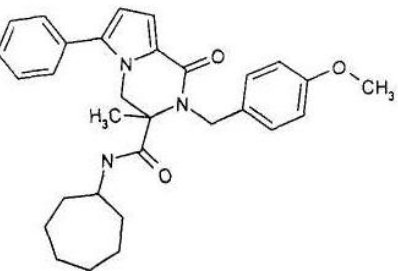
| | | | |
|----|---|-----------|-----|
| 46 |  | 455,60526 | 456 |
| 47 |  | 459,5686 | 460 |
| 48 |  | 469,63235 | 470 |
| 49 |  | 478,64006 | 479 |
| 50 |  | 476,62412 | 477 |

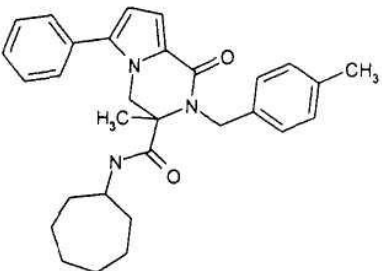
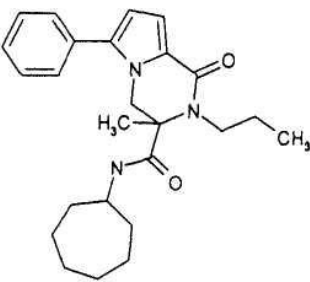
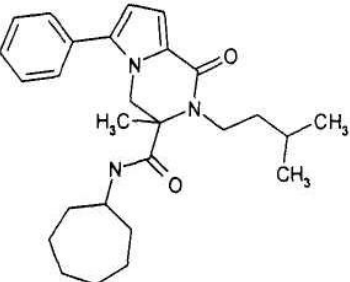
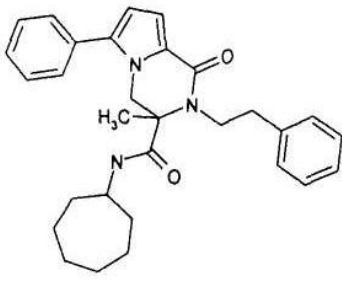
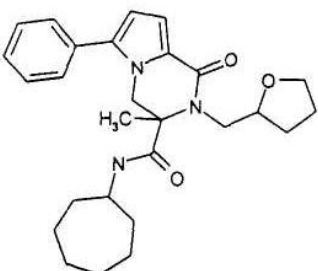
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| 51 |  | 433,5989 | 434 |
| 52 |  | 490,05029 | 491 |
| 53 |  | 490,05029 | 491 |
| 54 |  | 490,05029 | 491 |
| 55 |  | 485,63175 | 486 |

| | | | |
|----|---|-----------|-----|
| 56 |  | 469,63235 | 470 |
| 57 |  | 483,65944 | 484 |
| 58 |  | 435,61484 | 436 |
| 59 |  | 469,63235 | 470 |
| 60 |  | 469,63235 | 470 |

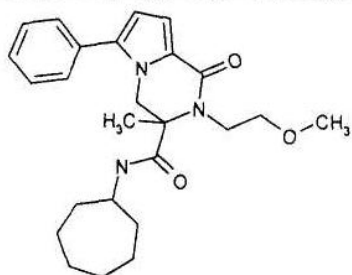
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| 62 |  | 485,63175 | 486 |
| 63 |  | 483,65944 | 484 |
| 64 |  | 461,63102 | 462 |
| 65 |  | 473 66423 | 474 |

| | | | |
|----|---|-----------|-----|
| 66 |  | 421,58775 | 422 |
| 67 |  | 475,65811 | 476 |
| 68 |  | 469,63235 | 470 |
| 69 |  | 473,59569 | 474 |
| 70 |  | 483,65944 | 484 |

| | | | |
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| 71 |  | 478,64006 | 479 |
| 72 |  | 455,60526 | 456 |
| 73 |  | 490,05029 | 491 |
| 74 |  | 490,05029 | 491 |
| 75 |  | 485,63175 | 486 |

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|----|---|-----------|-----|
| 76 |  | 469,63235 | 470 |
| 77 |  | 407,56066 | 408 |
| 78 |  | 435,61484 | 436 |
| 79 |  | 469,63235 | 470 |
| 80 |  | 449,5983 | 450 |

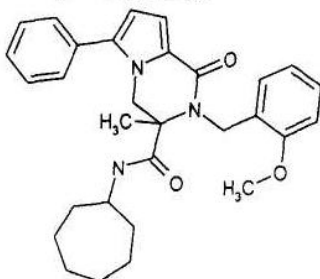
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424

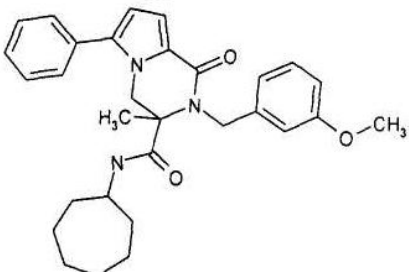
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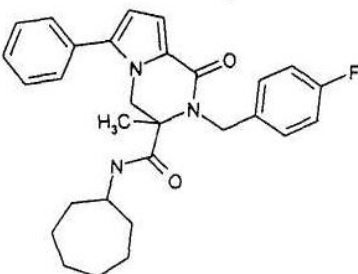
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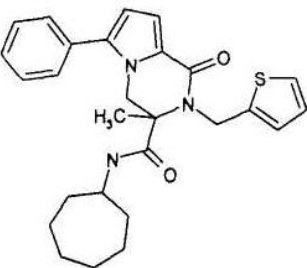
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473,59569

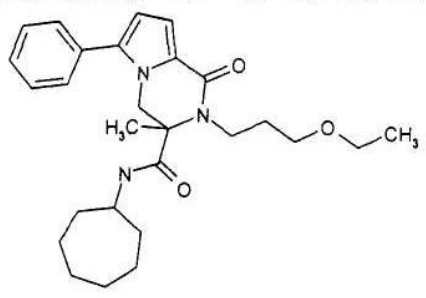
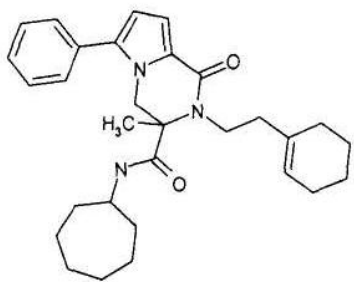
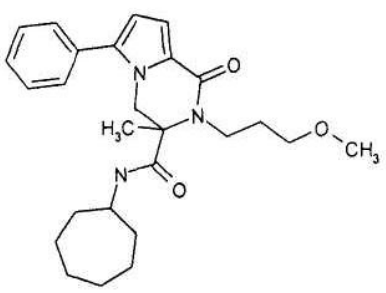
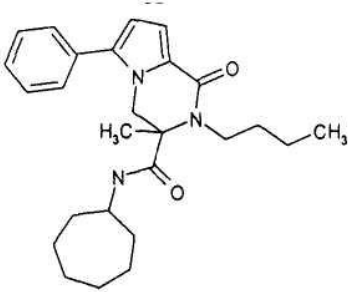
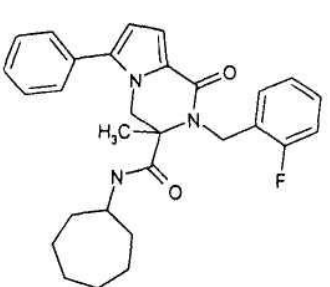
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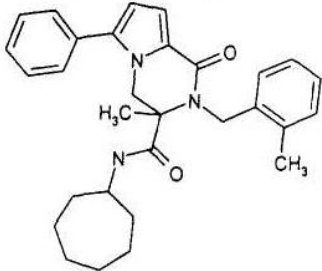
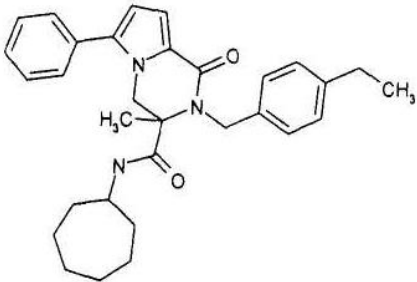
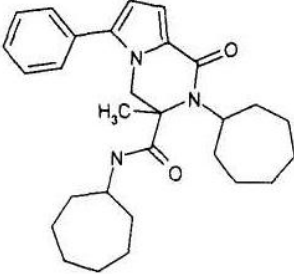
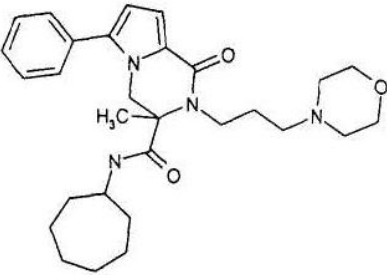
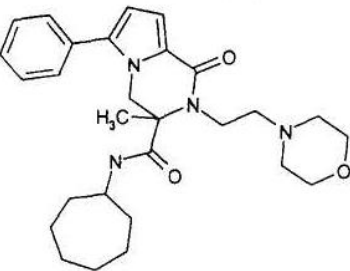
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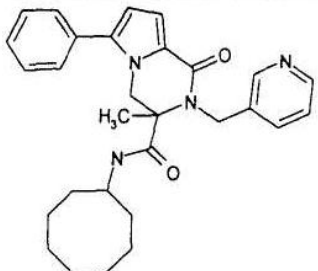
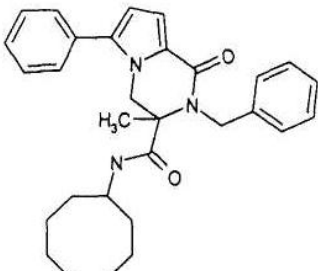
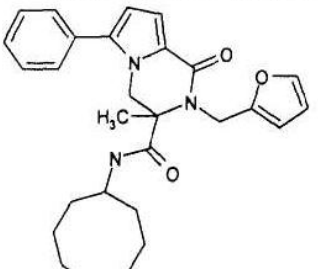
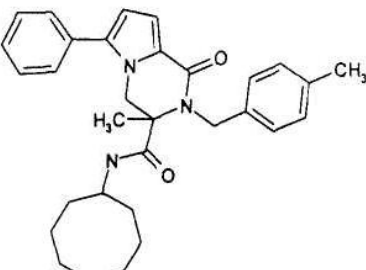
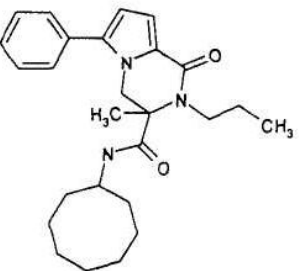


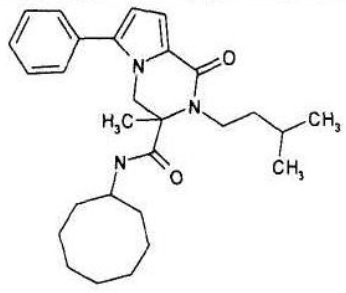
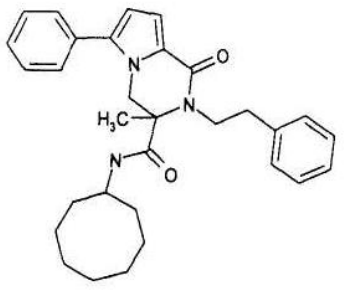
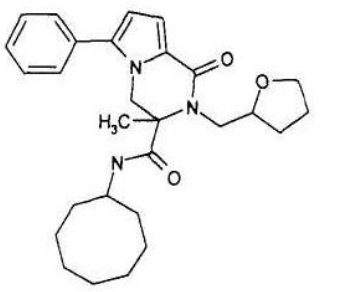
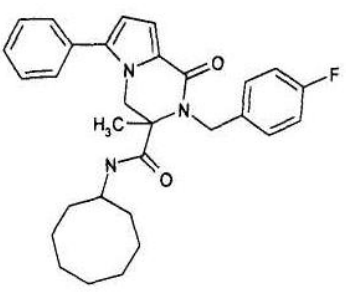
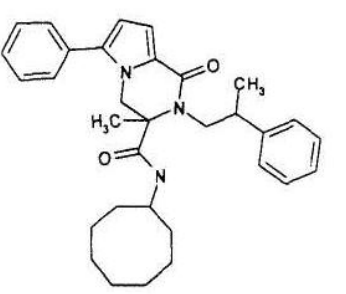
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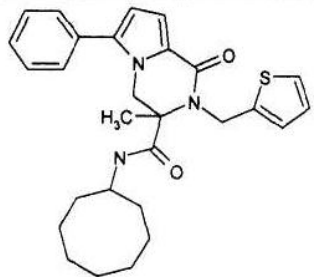
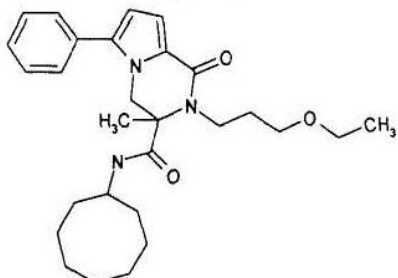
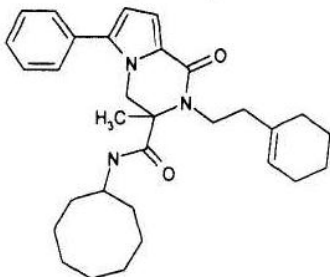
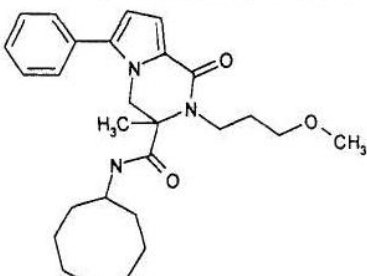
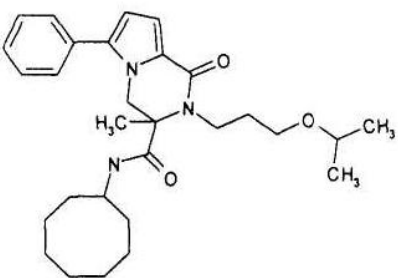
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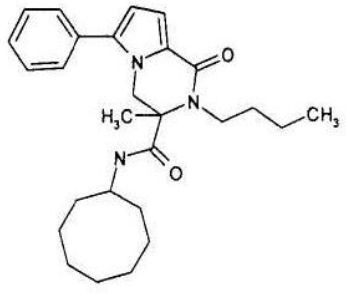
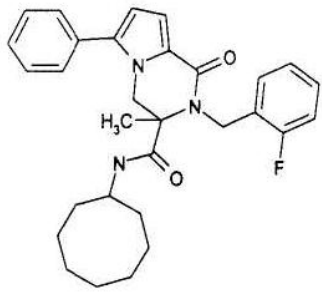
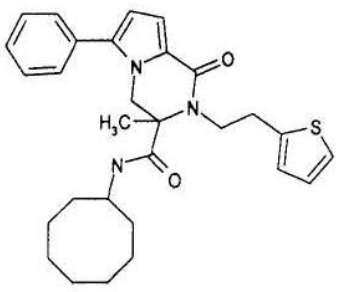
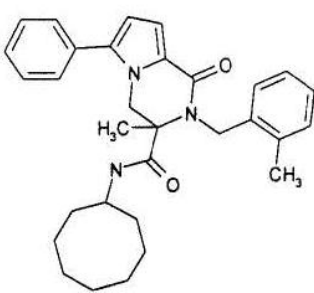
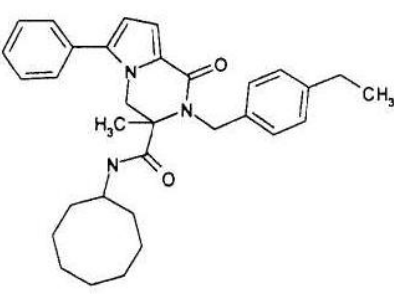
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|----|---|-----------|-----|
| 86 |  | 451,61424 | 452 |
| 87 |  | 473,66423 | 474 |
| 88 |  | 437,58715 | 438 |
| 89 |  | 421,58775 | 422 |
| 90 |  | 473,59569 | 474 |

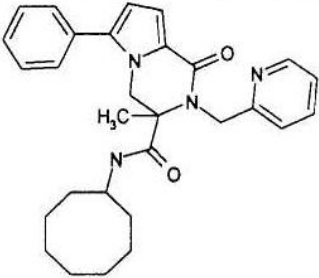
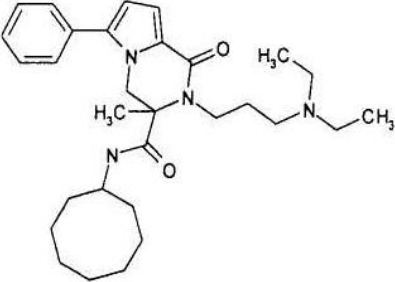
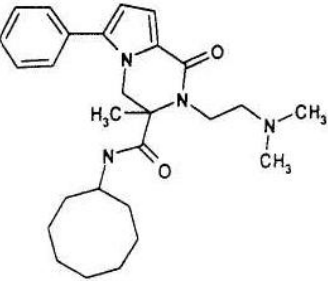
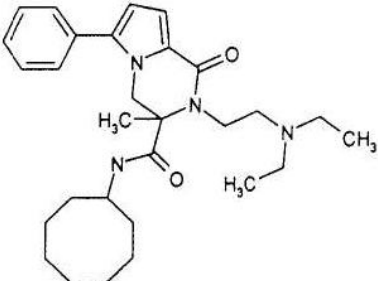
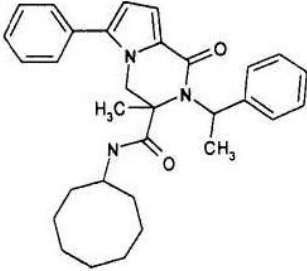
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| 91 |  | 469,63235 | 470 |
| 92 |  | 483,65944 | 484 |
| 93 |  | 461,65308 | 462 |
| 94 |  | 492,66715 | 493 |
| 95 |  | 478,64006 | 479 |

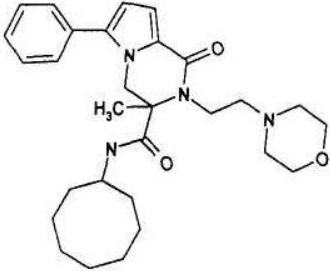
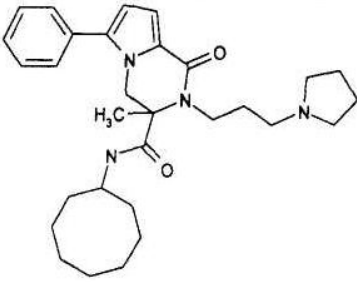
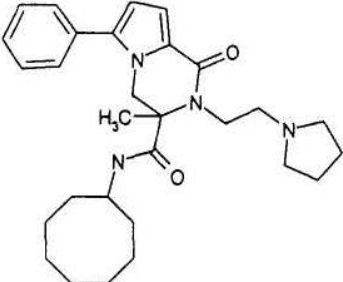
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| 97 |  | 469,63235 | 470 |
| 98 |  | 459,59351 | 460 |
| 99 |  | 483,65944 | 484 |
| 100 |  | 421,58775 | 422 |

| | | | |
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| 101 |  | 449,64193 | 450 |
| 102 |  | 483,65944 | 484 |
| 103 |  | 463,62539 | 464 |
| 104 |  | 487,62278 | 488 |
| 105 |  | 497,68653 | 498 |

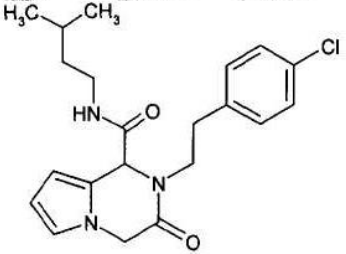


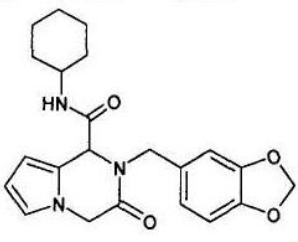
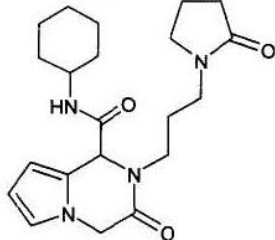
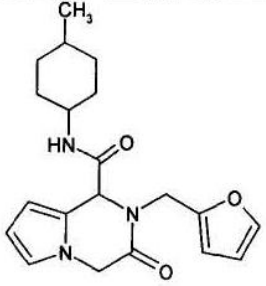
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| 107 |  | 465,64133 | 466 |
| 108 |  | 487,69132 | 488 |
| 109 |  | 451,61424 | 452 |
| 110 |  | 479,66842 | 480 |

| | | | |
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| 111 |  | 435,61484 | 436 |
| 112 |  | 487,62278 | 488 |
| 113 |  | 489,6852 | 490 |
| 114 |  | 483,65944 | 484 |
| 115 |  | 497,68653 | 498 |

| | | | |
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| 116 |  | 470,61993 | 471 |
| 117 |  | 492,71078 | 493 |
| 118 |  | 450,62951 | 451 |
| 119 |  | 478,68369 | 479 |
| 120 |  | 483,65944 | 484 |

| | | | |
|-----|--|-----------|-----|
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| 122 |  | 490,69484 | 491 |
| 123 |  | 476,66775 | 477 |

Таблиця 1.02

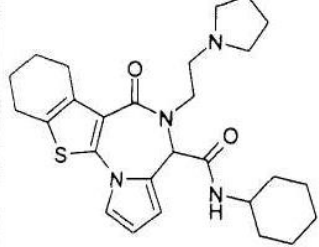
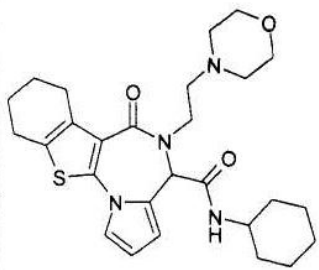
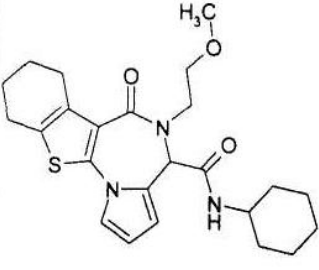
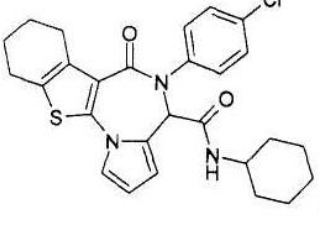
| № п.п. | Формула | Спектральні дані |
|-----------|---|---|
| 1 |  | $^1\text{H-NMR}$ (400 MHz, $\text{DMSO-}d_6 + \text{CCl}_4$): δ 8.1-8.0 (br s, 1H), 7.3-7.1 (m, 4H), 6.55 (s, 1H), 6.0-5.9 (d, $J = 8.6$ Hz, 2H), 5.06 (s, 1H), 4.7 (d, $J = 5.4$ Hz, 1H), 4.5 (d, $J = 5.4$ Hz, 1H), 3.81-3.74 (m, 1H), 3.2-3.08 (m, 3H), 3.0-2.8 (m, 1H), 2.8-2.6 (m, 1H), 1.65-1.5 (m, 1H), 1.38-1.22 (q, $J = 4.6$ Hz, 2H); HRMS (m/z): $[\text{M}]^+$ calcd for $\text{C}_{21}\text{H}_{26}\text{ClN}_3\text{O}_2$, 387.9133; found, 387.9138. |
| 2 |  | $^1\text{H-NMR}$ (400 MHz, $\text{DMSO-}d_6 + \text{CCl}_4$): δ 8.16 (d, $J = 7.8$ Hz, 1H), 7.4 (q _F , $J = 7.6$ Hz, 1H), 7.1-6.9 (m, 3H), 6.63 (s, 1H), 6.0-5.9 (d, $J = 9.4$ Hz, 2H), 5.4 (s, 1H), 4.9 (d, $J = 5.4$ Hz, 1H), 4.7 (d, $J = 5.4$ Hz, 1H), 4.01-3.85 (m, 1H), 2.0-1.2 (m, 8H); HRMS (m/z): $[\text{M}]^+$ calcd for $\text{C}_{19}\text{H}_{20}\text{FN}_3\text{O}_2$, 341.3886; found, 341.3879. |
| 3 |  | $^1\text{H-NMR}$ (400 MHz, $\text{DMSO-}d_6 + \text{CCl}_4$): δ 8.12 (d, $J = 7.6$ Hz, 1H), 7.24 (d, $J = 8.2$ Hz, 1H), 7.0 (d, $J = 8.2$ Hz, 1H), 7.0-6.82 (t, $J = 8.0$ Hz, 1H), 6.58 (s, 1H), 6.0-5.9 (d, $J = 5.9$ Hz, 2H), 5.3 (d, $J = 5.6$ Hz, 1H), 5.1 (s, 1H), 4.75 (d, $J = 5.6$ Hz, 1H), 4.6 (d, $J = 5.6$ Hz, 1H), 4.1 (d, $J = 5.6$ Hz, 1H), 4.02-3.87 (m, 1H), 2.0-1.1 (m, 8H); HRMS (m/z): $[\text{M}]^+$ calcd for $\text{C}_{18}\text{H}_{21}\text{N}_3\text{O}_2\text{S}$, 343.4510; found, 343.4516. |
| 4 |  | $^1\text{H-NMR}$ (400 MHz, $\text{DMSO-}d_6 + \text{CCl}_4$): δ 8.2 (br s, 1H), 7.2 (d, $J = 7.8$ Hz, 1H), 7.0 (s, 1H), 6.7 (d, $J = 7.8$ Hz, 1H), 6.55 (s, 1H), 6.0-5.9 (d, $J = 8.6$ Hz, 2H), 5.1 (s, 1H), 4.8 (d, $J = 5.4$ Hz, 1H), 4.51 (d, $J = 5.4$ Hz, 1H), 3.83-3.79 (m, 2H), 3.2-3.03 (m, 2H), 3.0-2.8 (m, 1H), 1.9-1.0 (m, 10H); HRMS (m/z): $[\text{M}]^+$ calcd for $\text{C}_{22}\text{H}_{25}\text{N}_3\text{O}_4$, 395.4623; found, 395.4620. |
| 5 |  | $^1\text{H-NMR}$ (400 MHz, $\text{DMSO-}d_6 + \text{CCl}_4$): δ 8.02 (d, $J = 7.6$ Hz, 1H), 6.55 (s, 1H), 6.0-5.8 (d, $J = 8.2$ Hz, 2H), 5.1 (s, 1H), 4.72 (d, $J = 5.4$ Hz, 1H), 4.45 (d, $J = 5.4$ Hz, 1H), 3.6-3.5 (m, 1H), 3.5-3.4 (m, 1H), 3.4-3.3 (m, 2H), 3.3-3.15 (m, 2H), 3.1-2.9 (m, 1H), 2.22-1.13 (m, 16H); HRMS (m/z): $[\text{M}]^+$ calcd for $\text{C}_{21}\text{H}_{30}\text{N}_4\text{O}_2$, 386.4982; found, 386.4978. |
| 6 |  | $^1\text{H-NMR}$ (400 MHz, $\text{DMSO-}d_6 + \text{CCl}_4$): δ 8.10 (d, $J = 7.4$ Hz, 1H), 7.26 (d, $J = 8.4$ Hz, 1H), 7.1 (d, $J = 8.4$ Hz, 1H), 7.1-6.9 (t, $J = 8.2$ Hz, 1H), 6.53 (s, 1H), 6.0-5.88 (d, $J = 5.8$ Hz, 2H), 5.31 (d, $J = 5.6$ Hz, 1H), 5.11 (s, 1H), 4.73 (d, $J = 5.6$ Hz, 1H), 4.63 (d, $J = 5.6$ Hz, 1H), 4.1 (d, $J = 5.6$ Hz, 1H), 3.91-3.82 (m, 1H), 2.1-1.0 (m, 9H), 0.98 (d, $J = 4.6$ Hz, 2H), 0.93 (d, $J = 4.6$ Hz, 1H); HRMS (m/z): $[\text{M}]^+$ calcd for $\text{C}_{20}\text{H}_{25}\text{N}_2\text{O}_3$, 355.4423; found, 355.4416. |

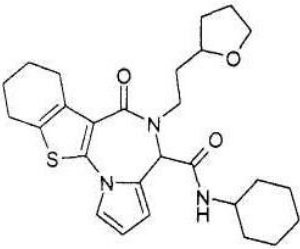

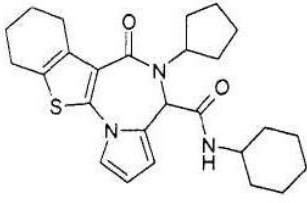
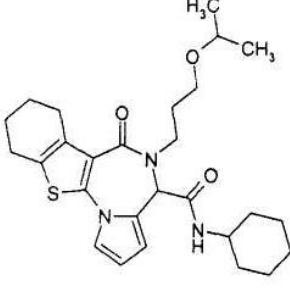
| | | |
|----|--|--|
| 7 | | ¹ H-NMR (400 MHz, DMSO- <i>d</i> ₆ +CCl ₄): δ 7.83 (br s, 1H), 6.52 (s, 1H), 6.0-5.89 (d, <i>J</i> = 7.4 Hz, 2H), 5.2 (s, 1H), 4.65 (d, <i>J</i> = 5.6 Hz, 1H), 4.46 (d, <i>J</i> = 5.6 Hz, 1H), 3.88-3.71 (m, 2H), 3.51-3.3 (m, 2H), 3.22 (s, 3H), 3.1-3.0 (m, 1H), 1.92-1.0 (m, 9H), 0.99 (d, <i>J</i> = 4.6 Hz, 2H), 0.95 (d, <i>J</i> = 4.6 Hz, 1H); HRMS (<i>m/z</i>): [<i>M</i>] ⁺ calcd for C ₁₈ H ₂₇ N ₃ O ₃ , 333.4342; found, 333.4340. |
| 8 | | ¹ H-NMR (400 MHz, DMSO- <i>d</i> ₆ +CCl ₄): δ 8.4 (s, 2H), 7.9-7.69 (m, 1H), 7.3-7.0 (m, 6H), 6.60 (s, 1H), 6.08-6.0 (d, <i>J</i> = 8.4 Hz, 2H), 5.4 (s, 1H), 4.8 (d, <i>J</i> = 5.6 Hz, 1H), 4.62 (d, <i>J</i> = 5.6 Hz, 1H), 4.0 (s, 2H), 3.18-3.03 (m, 1H), 1.8-1.0 (m, 9H), 0.8-0.63 (m, 3H); HRMS (<i>m/z</i>): [<i>M</i>] ⁺ calcd for C ₂₇ H ₃₀ N ₄ O ₂ , 442.5658; found, 442.5653. |
| 9 | | ¹ H-NMR (400 MHz, DMSO- <i>d</i> ₆ +CCl ₄): δ 7.8-7.68 (d, <i>J</i> = 6.4 Hz, 1H), 7.3 (d, <i>J</i> = 7.8 Hz, 2H), 7.2 (d, <i>J</i> = 7.8 Hz, 2H), 6.56 (s, 1H), 6.1-5.95 (d, <i>J</i> = 7.6 Hz, 2H), 5.23 (s, 1H), 4.72 (d, <i>J</i> = 5.4 Hz, 1H), 4.55 (d, <i>J</i> = 5.4 Hz, 1H), 3.2-3.11 (m, 1H), 2.0-0.6 (m, 8H), 0.8 (s, 3H), 0.68 (s, 3H); HRMS (<i>m/z</i>): [<i>M</i>] ⁺ calcd for C ₂₂ H ₂₆ ClN ₃ O ₂ , 399.9244; found, 399.9248. |
| 10 | | ¹ H-NMR (400 MHz, DMSO- <i>d</i> ₆ +CCl ₄): δ 8.03 (d, <i>J</i> = 7.8 Hz, 1H), 6.51 (s, 1H), 6.0-5.92 (d, <i>J</i> = 7.6 Hz, 2H), 5.1 (s, 1H), 4.68 (d, <i>J</i> = 5.4 Hz, 1H), 4.48 (d, <i>J</i> = 5.4 Hz, 1H), 4.1-3.92 (m, 1H), 3.81-3.67 (m, 1H), 1.91-1.31 (m, 14H), 1.00-0.5 (m, 4H); HRMS (<i>m/z</i>): [<i>M</i>] ⁺ calcd for C ₁₉ H ₂₇ N ₃ O ₂ , 329.4459; found, 329.4463. |

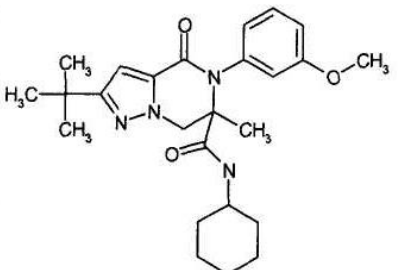
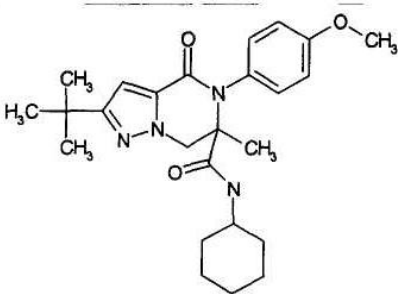
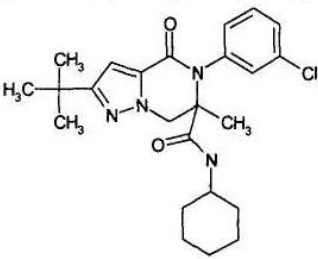
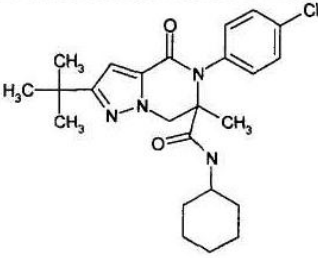
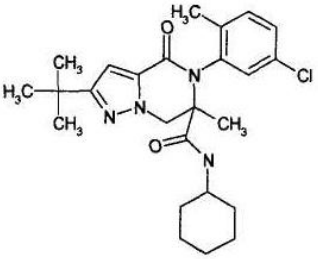
Таблиця 1.03

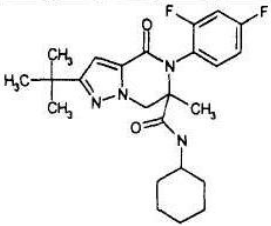
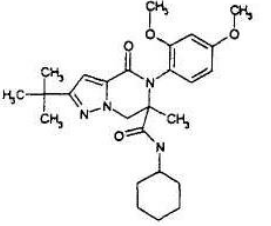
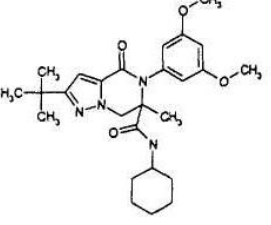
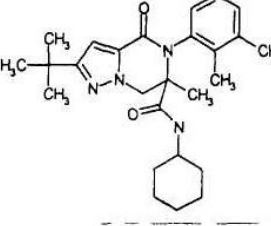
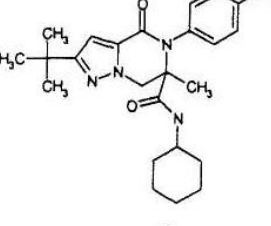
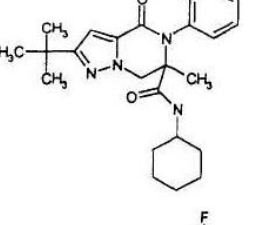
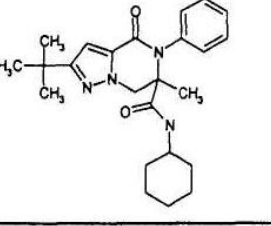
| № п.п. | Формула | Мол. маса | HRMS <i>m/z</i> | Спектральні дані |
|--------|---------|-----------|-----------------|--|
| 1 | | 476.2099 | 476.2091 | ¹ H-NMR (400MHz, DMSO+CCl ₄): δ 0.75-1.6 (m, 12 H, cyclooctane), 2.3 (s, 3 H, CH ₃), 3.3-3.48 (m, 1 H, CH), 4.6-4.7 (q, <i>J</i> = 5.6 Hz, 2 H, CH ₂), 5.15 (s, 1 H, CH), 5.9 (d, <i>J</i> = 2.2 Hz, 1 H, NH), 6.0-6.08 (s, 1 H, ArH), 6.18-6.2 (s, 1 H, ArH), 7.0-7.4 (m, 7 H, ArH), 7.78 (d, <i>J</i> = 7.7 Hz, 1 H, ArH) |
| 2 | | 462.1943 | 462.1935 | ¹ H-NMR (400MHz, DMSO+CCl ₄): δ 0.73-1.58 (m, 12 H, cyclooctane), 3.28-3.47 (m, 1 H, CH), 4.61-4.72 (d, <i>J</i> = 5.9 Hz, 2 H, CH ₂), 4.8-4.96 (d, <i>J</i> = 5.9 Hz, 2 H, CH ₂), 5.12 (s, 1 H, CH), 5.9-6.0 (m, 2 H, ArH, NH), 6.18 (s, 1 H, ArH), 7.0-7.4 (m, 8 H, ArH), 7.77 (d, <i>J</i> = 7.8 Hz, 1 H, ArH) |

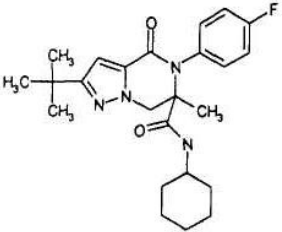
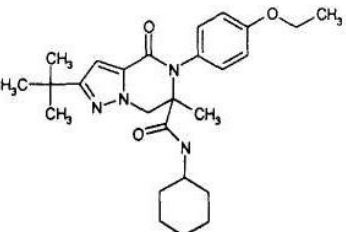
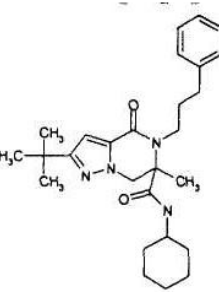
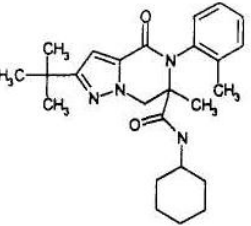
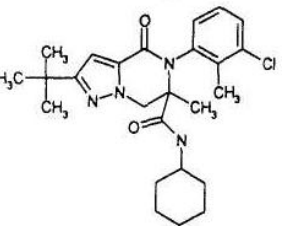
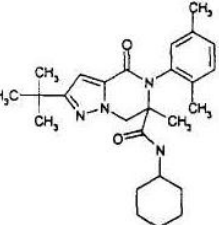
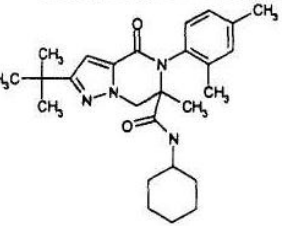
Таблиця 1.04

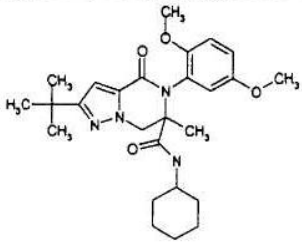
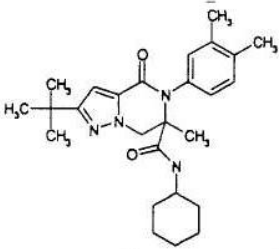
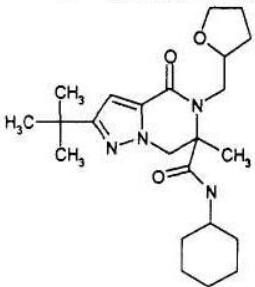
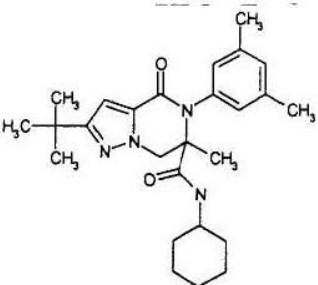
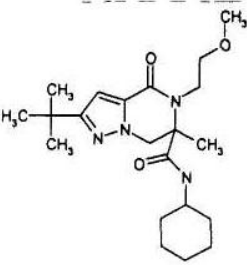
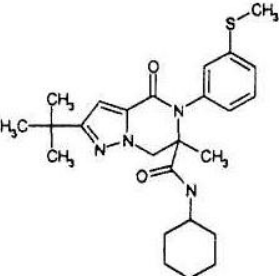
| № п.п. | Формула | Мол.маса | HRMS m/z | Спектральні дані |
|-----------|---|----------|------------|--|
| 1 |  | 481.2632 | 481.2633 | ^1H NMR (400MHz, DMSO+CCl ₄): δ 0.75-3.45 (m, 30 H, cyclohexane, pyrrolidine, tetrahydrobenzothiophene, 2CH ₂), 4.37-4.52 (t, J = 3.1 Hz, 1 H, CH), 5.15 (s, 1 H, CH), 6.17 (s, 2 H, ArH), 6.8 (s, 1 H, ArH), 8.15-8.3 (br s, 1 H, NH) |
| 2 |  | 497.2581 | 497.2576 | ^1H NMR (400MHz, DMSO+CCl ₄): δ 0.85-3.77 (m, 30 H, cyclohexane, morpholine, tetrahydrobenzothiophene, 2CH ₂), 4.2-4.4 (t, J = 3.4 Hz, 1 H, CH), 5.2 (s, 1 H, CH), 6.19 (s, 2 H, ArH), 6.8 (s, 1 H, ArH), 7.1-7.2 (br s, 1 H, NH) |
| 3 |  | 442.2159 | 442.2152 | ^1H NMR (400MHz, DMSO+CCl ₄): δ 0.76-3.73 (m, 22 H, cyclohexane, tetrahydrobenzothiophene, 2CH ₂), 3.33 (s, 3 H, CH ₃), 4.13 (s, 1 H, CH), 5.17 (s, 1 H, CH), 6.18 (s, 2 H, ArH), 6.84 (s, 1 H, ArH), 6.5-6.69 (br s, 1 H, NH) |
| 4 |  | 494.1663 | 494.1661 | ^1H NMR (400MHz, DMSO+CCl ₄): δ 0.8-3.0 (m, 18 H, cyclohexane, tetrahydrobenzothiophene), 3.31-3.49 (s, 1 H, CH), 5.35 (s, 1 H, CH), 6.8-6.0 (br s, 1 H, NH), 6.23 (s, 2 H, ArH), 6.91 (s, 1 H, ArH), 7.2-7.4 (m, 4 H, ArH) |

| | | | | |
|---|---|----------|----------|--|
| 5 |  | 482.2315 | 482.2474 | ¹ HNMR (400MHz, DMSO+CCl ₄): δ 1.0-3.2 (m, 24 H, cyclohexane, tetrahydrofuran), 3.5-3.6 (m, 1 H, CH), 3.7-4.0 (m, 2 H, CH ₂), 4.2-4.5 (q, <i>J</i> = 1.8 Hz, 1 H, CH), 5.26 (s, 1 H, NH), 6.15 (s, 2 H, ArH), 6.87 (d, <i>J</i> = 7.7 Hz, 1 H, ArH), 7.3 (br s, 1 H, NH) |
| 6 |  | 458.2523 | 458.2521 | ¹ HNMR (400MHz, DMSO+CCl ₄): δ 0.6-2.0 (m, 18 H, cyclohexane, tetrahydrobenzothiophene), 1.5 (s, 6 H, 2CH ₃), 2.3-3.0 (m, 4 H, 2CH ₂), 3.3-3.47 (m, 1 H, CH), 5.07 (s, 1 H, CH), 5.9-6.0 (m, 1 H, NH), 6.23 (d, <i>J</i> = 7.8 Hz, 2 H, ArH), 6.88 (s, 1 H, ArH) |
| 7 |  | 466.2366 | 466.2513 | ¹ HNMR (400MHz, DMSO+CCl ₄): δ 1.1-2.0 (m, 26 H, cyclohexane, cyclopentane, tetrahydrobenzothiophene), 2.8-3.0 (m, 1 H, CH), 3.47-3.59 (m, 1 H, CH), 5.1 (s, 1 H, CH), 5.7-5.9 (br s, 1 H, NH), 6.16-6.3 (d, <i>J</i> = 7.6 Hz, 2 H, ArH), 6.9 (s, 1 H, ArH) |
| 8 |  | 498.2628 | 498.2763 | ¹ HNMR (400MHz, DMSO+CCl ₄): δ 1.1 (2s, 3 H, 2CH ₃), 1.04-2.1 (m, 24 H, cyclohexane, tetrahydrobenzothiophene), 2.65-2.7 (m, 2 H, CH ₂), 3.25-3.32 (m, 2 H, CH ₂), 3.39-3.58 (m, 2 H, CH ₂), 3.5-3.61 (m, 1 H, CH), 3.62-3.73 (m, 1 H, CH), 5.12 (s, 1 H, CH), 5.9-6.05 (br s, 1 H, NH), 6.21-6.3 (d, <i>J</i> = 7.9 Hz, 2 H, ArH), 6.8 (s, 1 H, ArH) |

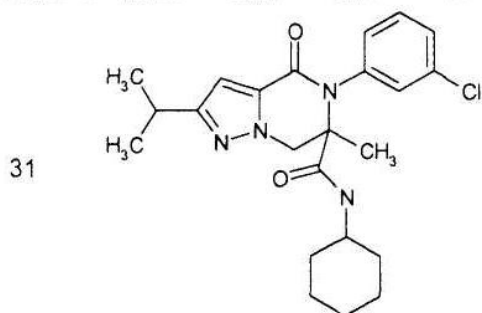
| Таблица 1.05(1) | | | |
|-----------------|---|-----------|--|
| № п.п. | Формула | Мол.масса | Масс -спектр, m/z (M+1), ПМР спектр |
| 1 |  | 438,5747 | LC MS, m/z: 439 (M+1) 1H NMR: 1.00-1.75 (m, 24H, Alk), 3.46-3.58 (br s, 1H, NHCH), 3.81 (s, 3H, OMe), 4.29-4.35, 4.93-5.00 (dd, 2H, NCH2, J=13.9), 6.52 (s, 1H, CH(pyrazol)), 6.83-6.90 (m, 2H, 2CH(PhOMe)), 6.96 (s, 1H, CH(PhOMe)), 7.23-7.30 (m, 2H, 2CH(PhOMe)), 7.55-7.61 (m, 1H, NH) |
| 2 |  | 438,5747 | LC MS, m/z: 439 (M+1). 1H NMR: 1.00-1.76 (m, 24H, Alk), 3.45-3.55 (m, 1H, NHCH), 3.82 (s, OMe), 4.28-4.34, 4.93-5.00 (dd, 2H, NCH2, J=13.9), 6.5 (s, 1H, CH(pyrazol)), 6.85-6.90, 7.22-7.27 (dd, 4H, 4CH(p-PhOMe), J=9.3), 7.53-7.58 (m, 1H, NH) |
| 3 |  | 442,9933 | 443 |
| 4 |  | 442,9933 | 443 |
| 5 |  | 457,0204 | 458 |

| | | | |
|----|---|----------|-----|
| 6 |  | 444,5291 | 445 |
| 7 |  | 468,6012 | 469 |
| 8 |  | 468,6012 | 469 |
| 9 |  | 436,6024 | 437 |
| 10 |  | 436,6024 | 437 |
| 11 |  | 426,5387 | 427 |
| 12 |  | 426,5387 | 427 |

| | | | |
|----|---|----------|-----|
| 13 |  | 426,5387 | 427 |
| 14 |  | 452,6018 | 453 |
| 15 |  | 450,6295 | 451 |
| 16 |  | 422,5753 | 423 |
| 17 |  | 457,0204 | 458 |
| 18 |  | 436,6024 | 437 |
| 19 |  | 436,6024 | 437 |

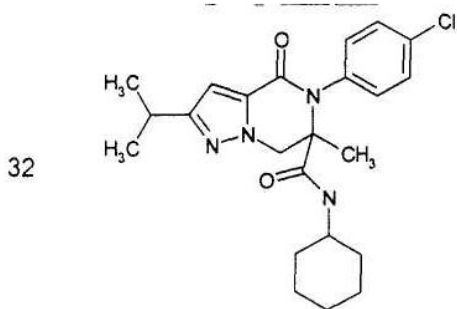
| | | | |
|----|---|----------|-----|
| 20 |  | 468,6012 | 469 |
| 21 |  | 436,6024 | 437 |
| 22 |  | 416,5684 | 417 |
| 23 |  | 436,6024 | 437 |
| 24 |  | 390,5301 | |
| 25 |  | 454,6393 | 455 |

| | | | |
|----|--|----------|--|
| 26 | | 428,6011 | 429 |
| 27 | | 404,5572 | LC MS, m/z: 405 (M+1). ¹ H NMR: 1.03-1.32 (m, 14H, Alk), 1.50-1.86 (m, 10H, Alk), 3.18-3.26 (m, 2H, Alk), 3.27 (s, 3H, OMe), 3.33-3.40 (m, 2H, Alk), 3.41-3.60 (m, 2H, Alk), 4.01-4.08, 4.71-4.77 (dd, 2H, NCH ₂ , J=3.17), 6.45 (s, 1H, CH(pyrazol)), 7.42-7.49 (m, 1H, NH) |
| 28 | | 422,5753 | 423 |
| 29 | | 428,6232 | 429 |
| 30 | | 424,5476 | LC MS, m/z. 425 (M+1). ¹ H NMR: 1.00-1.74 (m, 24H, Alk), 3.43-3.52 (m, 1H, NHCH), 3.8 (s, 3H, OMe), 4.25-4.32, 4.87-4.94 (dd, 2H, NCH ₂ , J=13.8), 6.44 (s, 1H, CH(pyrazol)), 6.82-6.89, 7.19-7.25 (dd, 2H, (p-OMePh)), J=8), 7.53-7.59 (m, 1H, NH) |



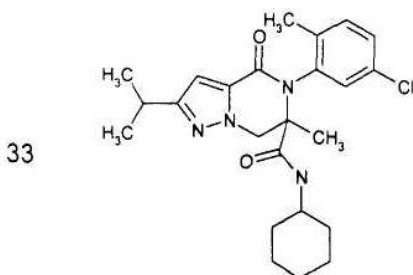
428,9662

429



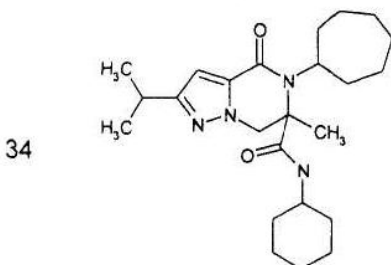
428,9662

LC MS, m/z: 429 (M+1). ¹H NMR: 1.00-1.78 (m, 22H, Alk), 3.43-3.55 (m, 1H, NHCH), 4.31-4.37, 4.91-4.98 (dd, 2H, NCH₂, J=12,7), 6.48 (s, 1H, CH(pyrazol)), 7.30-7.45 (m, 4H, Ar), 7.63-7.69 (m, 1H, NH)



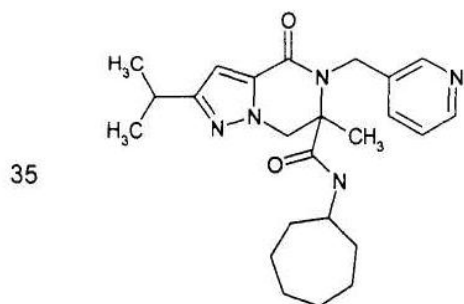
442,9933

443



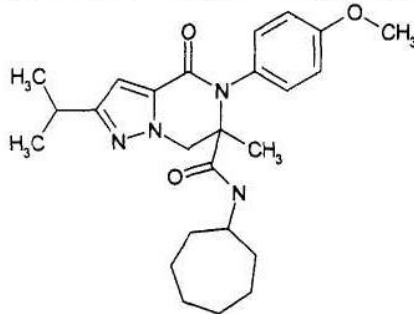
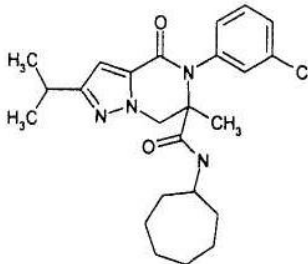
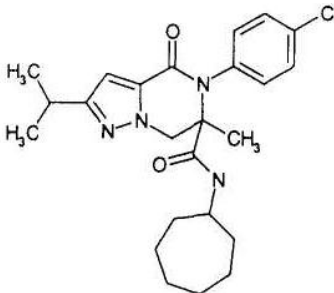
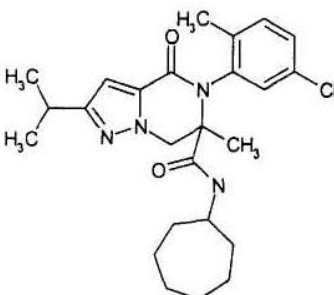
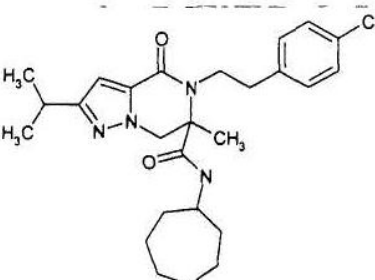
414,5961

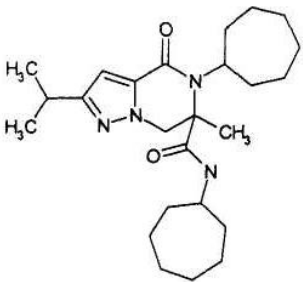
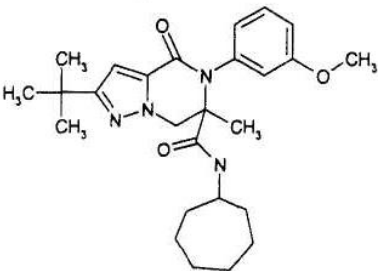
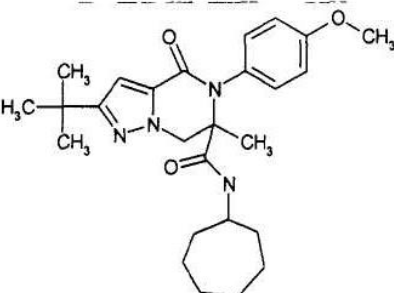
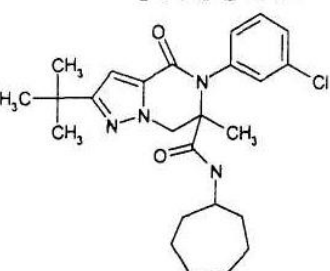
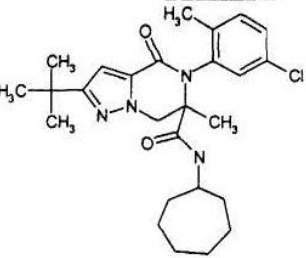
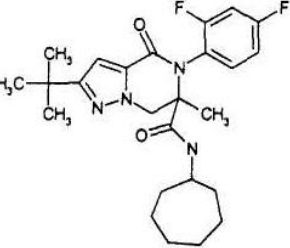
415



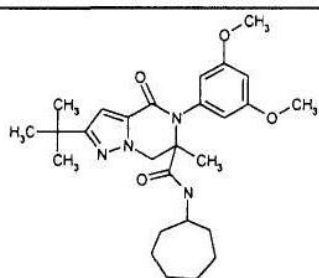
423,5629

424

| | | | | |
|----|---|--|----------|-----|
| 36 |  | LC MS, m/z: 439 (M+1). ¹ H NMR: 1.00-1.75 (m, 25H, Alk), 2.86-3.00 (m, 9H, (H ₂ O+Alk)), 3.59-3.70 (m, 1H, NHCH), 3.8 (s, 3H, OMe), 4.24-4.32, 4.87-4.95 (dd, 2H, NHCH, J=13.7), 6.44 (s, 1H, CH(pyrazol)), 6.83-6.89, 7.19-7.26 (dd, 4H, p-OMePh, J=9), 7.58-7.65 (m, 1H, NH) | 438,5747 | |
| 37 |  | | 442,9933 | 443 |
| 38 |  | | 442,9933 | 443 |
| 39 |  | | 457,0204 | 458 |
| 40 |  | | 471,0475 | 472 |

| | | | |
|----|---|----------|---|
| 41 |  | 428,6232 | LC MS, m/z: 429 (M+1). ¹ H NMR: .18-2.00 (m, 36H, Alk), 2.3-2.47 (m, 2H, Alk), 2.79-2.99 (m, 10H, (H ₂ O+Alk)), 3.76-3.89 (m, 1H, CHNH), 3.95-4.03, 4.55-4.62 (dd, 2H, NCH ₂ , J=13.3), 6.44 (s, 1H, CH(pyrazol)), 7.94-8.00 (m, 1H, NH) |
| 42 |  | 452,6018 | 453 |
| 43 |  | 452,6018 | LC MS, m/z: 453 (M+1). ¹ H NMR: 1.10-1.76 (m, 32H, Alk), 3.62-3.73 (m, 1H, NHCH), 3.83 (s, 3H, OMe), 4.28-4.35, 4.93-5.00 (dd, 2H, NCH ₂ , J=13.4), 6.49 (s, 1H, CH(pyrazol)), 6.86-6.91, 7.22-7.28 (dd, 4H, Ar, J=9.2), 7.62-7.67 (m, 1H, NH) |
| 44 |  | 457,0204 | LC MS, m/z: 458 (M+1). ¹ H NMR: 1.53-1.80 (m, 31H, Alk), 3.63-3.71 (m, 1H, NHCH), 4.35-4.41, 4.97-5.04 (dd, 2H, NCH ₂ , J=13.1), 6.53 (s, 1H, CH(pyrazol)), 7.3-7.5 (m, 4H, ClPh), 7.6-7.81 (m, 1H, NH) |
| 45 |  | 471,0475 | 472 |
| 46 |  | 458,5562 | 459 |

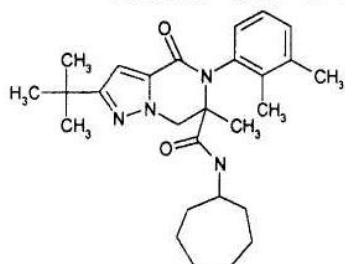
47



482,6283

483

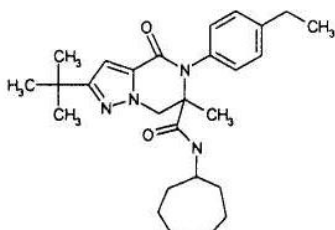
48



450,6295

451

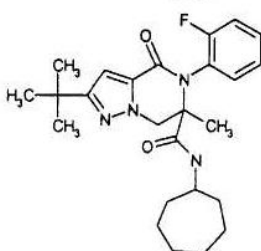
49



450,6295

451

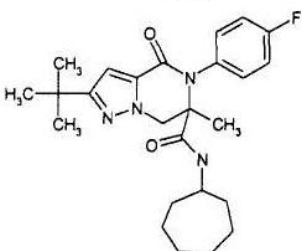
50



440,5658

441

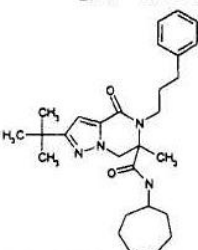
51



440,5658

441

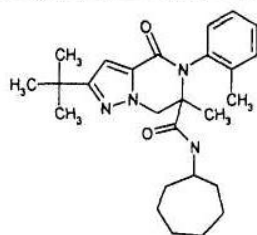
52



464,6566

465

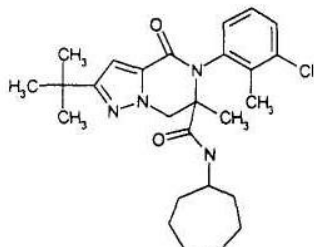
53



436,6024

437

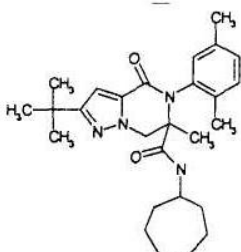
54



471,0475

472

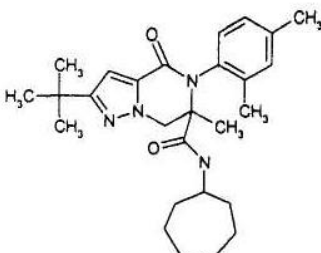
55



450,6295

451

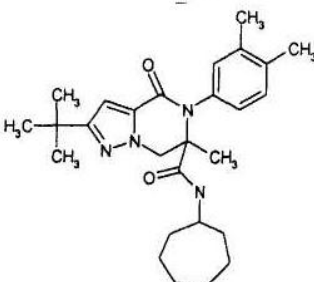
56



450,6295

451

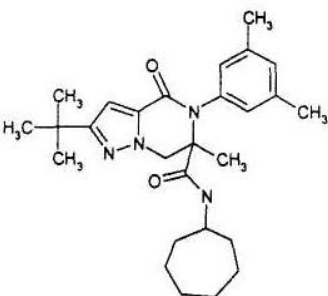
57



450,6295

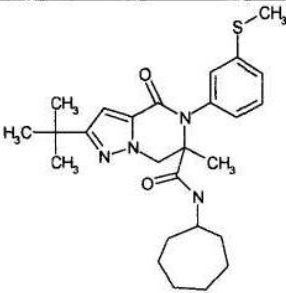
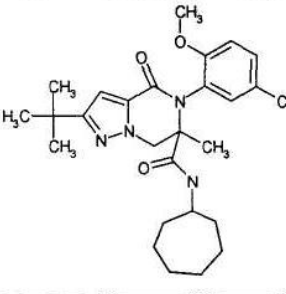
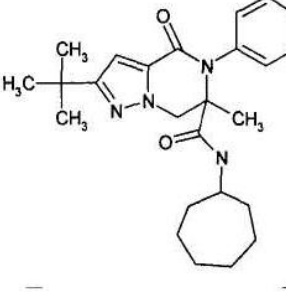
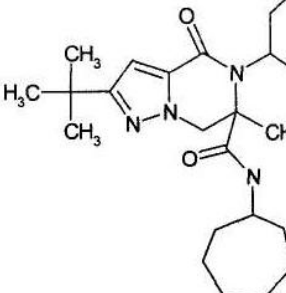
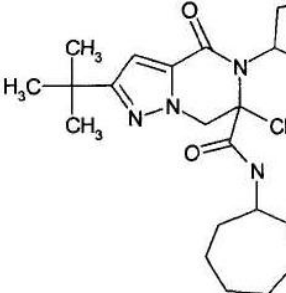
451

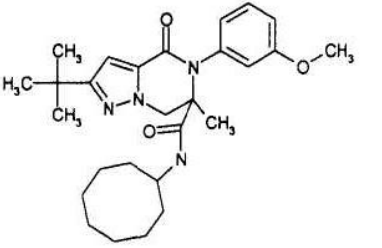
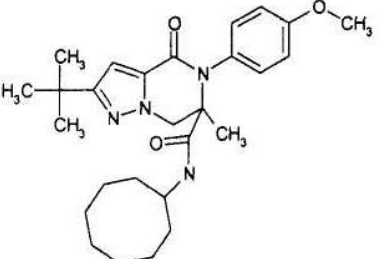
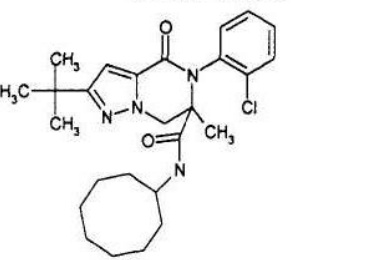
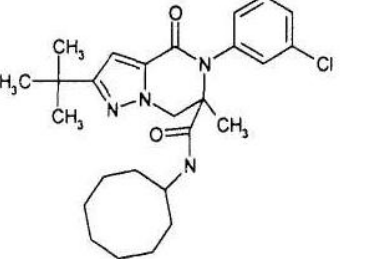
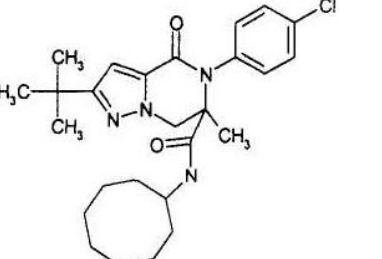

58



450,6295

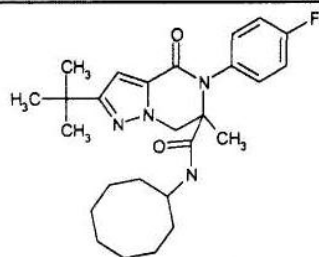
451

| | | | |
|----|---|----------|---|
| 59 |  | 468,6664 | 469 |
| 60 |  | 487,0469 | 488 |
| 61 |  | 436,6024 | 437 |
| 62 |  | 442,6502 | LC MS, m/z: 443 (M+1) 1H NMR: 1.20-2.00 (m, 35H, Alk), 2.30-2.46 (m, 3H, Alk), 2.79-2.89 (m, 2H, Alk), 3.77-3.86 (m, 1H, NHCH), 3.95-4.01, 4.55-4.62 (dd, 2H, CH2N, J=13.3), 6.46 (s, 1H, CH(pyrazol)), 7.91-7.97 (m, 1H, NH) |
| 63 |  | 414,5961 | LC MS, m/z: 415 (M+1) 1H NMR: 1.08-1.96 (m, 36H, Alk), 2.01-2.12 (m, 1H, Alk), 2.24-2.32 (m, 1H, Alk), 3.20-3.31 (m, 1H, Alk), 3.75-3.86 (m, 1H, NHCH), 3.98-4.05, 4.51-4.58 (dd, 2H, NCH2, J=12.3), 6.48 (s, 1H, pyrazol), 7.91-7.98 (m, 1H, NH) |

| | | | |
|----|---|----------|---|
| 64 |  | 466,6289 | 467 |
| 65 |  | 466,6289 | 467 |
| 66 |  | 471,0475 | 472 |
| 67 |  | 471,0475 | 472 |
| 68 |  | 471,0475 | LC MS, m/z: 472 (M+1). ¹ H NMR: 1.14-1.69 (m, 30H, Alk), 3.69-3.79 (m, 1H, Alk), 4.32-4.38, 4.98-5.04 (dd, 2H, NCH ₂ , J=13.6), 6.25 (s, 1H, CH(pyrazol)), 7.34-7.41 (m, 4H, p-ClPh), 7.66-7.72 (m, 1H, NH) |
| 69 |  | 485,0745 | 486 |

| | | | |
|----|--|----------|--|
| 70 | | 472,5833 | 473 |
| 71 | | 496,6554 | 497 |
| 72 | | 464,6566 | 465 |
| 73 | | 464,6566 | LC MS, m/z: 465 (M+1). 1H NMR: 1.23-1.70 (m, 33H, Alk), 2.66-2.74 (q, 2H, p-EtPh, J=7.2), 3.70-3.79 (m, 1H, NHCH), 4.29-4.38, 4.96-5.03 (dd, 2H, NCH2, J=14.5), 6.53 (s, 1H, CH(pyrazol)), 7.18-7.23, 7.23-7.28 (dd, 4H, Ar, J=7.2), 7.60-7.69 (m, 1H, NH) |
| 74 | | 454,5929 | 455 |
| 75 | | 454,5929 | 455 |

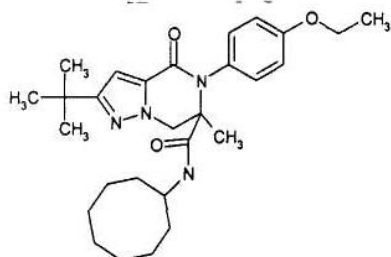
76



454,5929

455

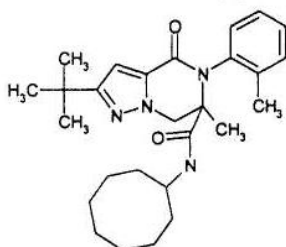
77



480,656

481

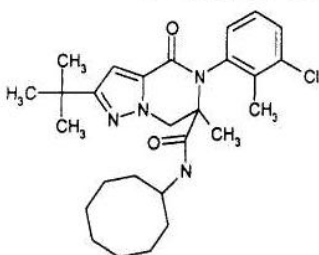
78



450,6295

451

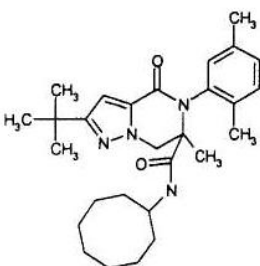
79



485,0745

486

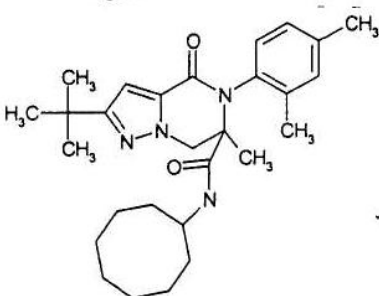
80



464,6566

465

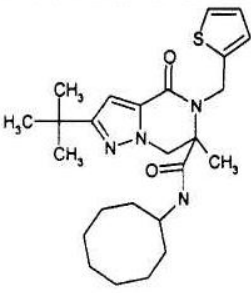
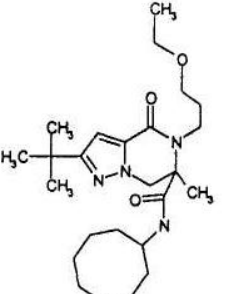
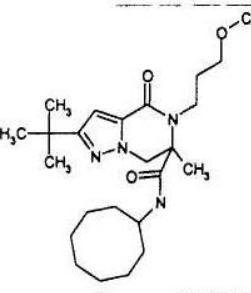
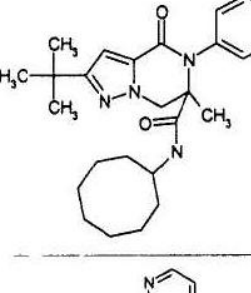
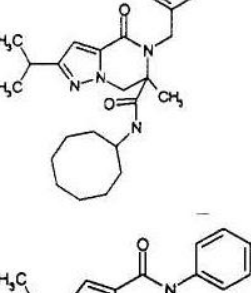
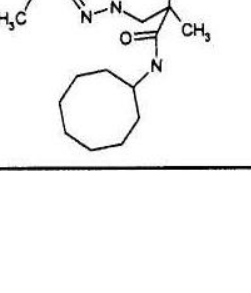
81



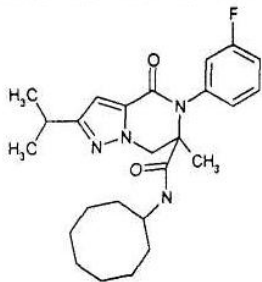
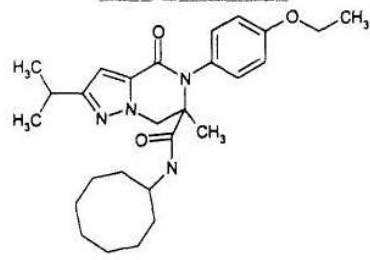
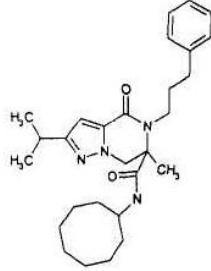
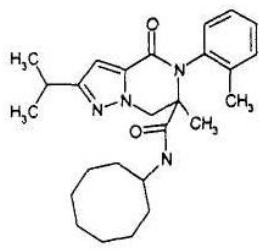
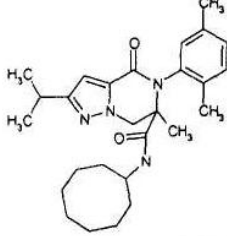
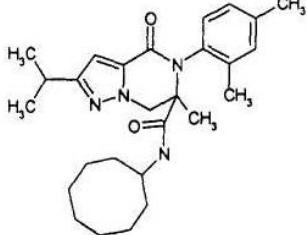
464,6566

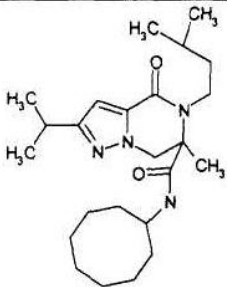
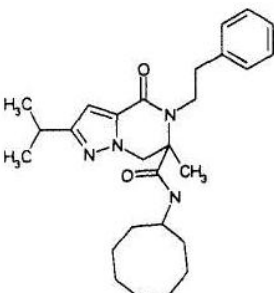
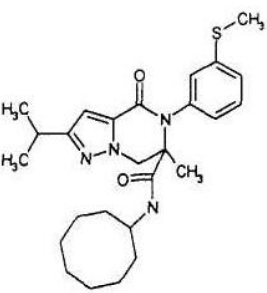
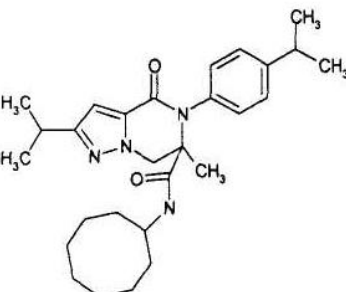
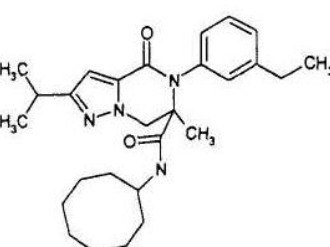
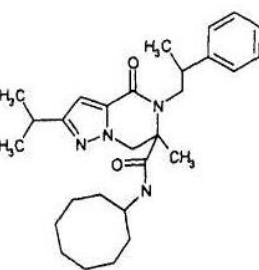
465



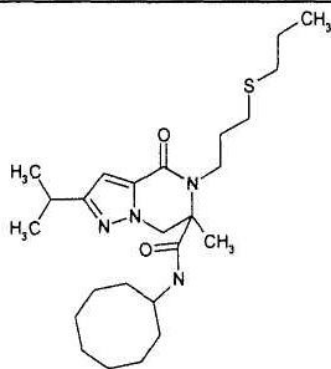
| | | | |
|----|---|----------|-----|
| 88 |  | 456,6553 | 457 |
| 89 |  | 446,6385 | 447 |
| 90 |  | 432,6114 | 433 |
| 91 |  | 450,6295 | 451 |
| 92 |  | 437,59 | 438 |
| 93 |  | 452,6018 | 453 |

| | | | |
|----|--|----------|---|
| 94 | | 457,0204 | 458 |
| 95 | | 457,0204 | 458 |
| 96 | | 471,0475 | 472 |
| 97 | | 485,0745 | 486 |
| 98 | | 458,5562 | LC MS, m/z: 459 (M+1). ¹ H NMR: 1.16-1.68 (m, 28H, Alk), 3.67-3.77 (m, 1H, NHCH), 4.24-4.31, 5.02-5.10 (dd, 2H, NCH ₂ , J=13.6), 6.5 (s, 1H, pyrazol), 6.94-7.06 (m, 2H, 2,4-F ₂ Ph), 7.68-7.82 (m, 2H, NH, CH(2,4-F ₂ Ph)) |
| 99 | | 450,6295 | LC MS, m/z: 451 (M+1). ¹ H NMR: 1.66 (m, 30H, Alk), 2.63-2.72 (q, 2H, CH ₂ (p-EtPh), J=7.9), 2.87-2.97 (m, 4H, (H ₂ O+Alk)), 3.68-3.78 (m, 1H, NHCH), 4.24-4.32, 4.89-4.97 (dd, 2H, NCH ₂ , J=13.8), 6.46 (s, 1H, CH(pyrazol)), 7.13-7.19, 7.19-7.25 (dd, 4H, 4CH(p-EtPh), J=7.9), 7.52-7.61 (m, 1H, CH(2,4-F ₂ Ph)) |

| | | | |
|-----|---|----------|-----|
| 100 |  | 440,5658 | 441 |
| 101 |  | 466,6289 | 467 |
| 102 |  | 464,6566 | 465 |
| 103 |  | 436,6024 | 437 |
| 104 |  | 450,6295 | 451 |
| 105 |  | 450 6295 | 451 |

| | | | |
|-----|---|----------|-----|
| 106 |  | 416,612 | 417 |
| 107 |  | 450,6295 | 451 |
| 108 |  | 468,6664 | 469 |
| 109 |  | 464,6566 | 465 |
| 110 |  | 450,6295 | 451 |
| 111 |  | 464,6566 | 465 |

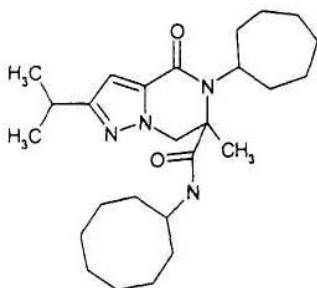
112



462,7031

463

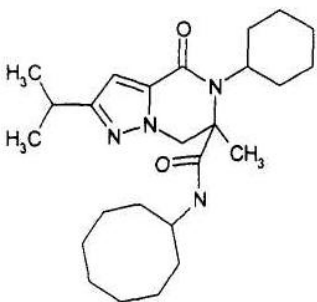
113



442,6502

LC MS, m/z: 443 (M+1). ¹H NMR: 1.16-1.80 (m, 35H, Alk), 1.88-2.00 (m, 1H, Alk), 2.30-2.47 (m, 2H, Alk), 2.82-3.00 (m, 3H, Alk), 3.80-3.92 (m, 1H, NHCH), 4.00-4.07, 4.56-4.63 (dd, 2H, NCH₂, J=13.8), 6.45 (s, 1H, CH(pyrazol)), 7.96-8.04 (m, 1H, NH)

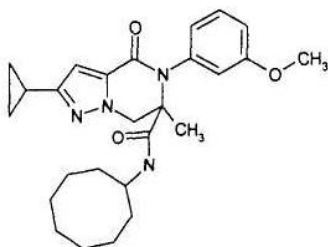
114



428,6232

LC MS, m/z: 429 (M+1) ¹H NMR: 1.09-1.90 (m, 36H, Alk), 2.38-2.54 (m, 4H, DMSO+Alk), 2.60-2.71 (m, 1H, Alk), 2.85-2.96 (m, 6H, H₂O+Alk), 1.84-1.93 (m, 1H, NHCH), 3.94-4.00, 4.54-4.61 (dd, 2H, NCH₂, J=12.1), 6.44 (s, 1H, CH(pyrazol)), 7.96-8.04 (m, 1H, NH)

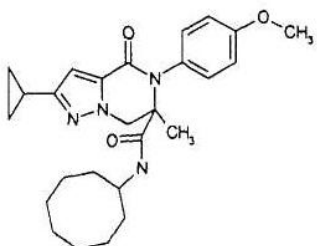
115



450,5859

451

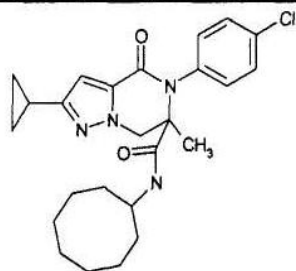
116



450,5859

451

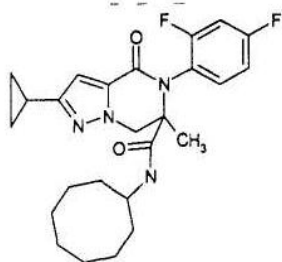
117



455,0044

456

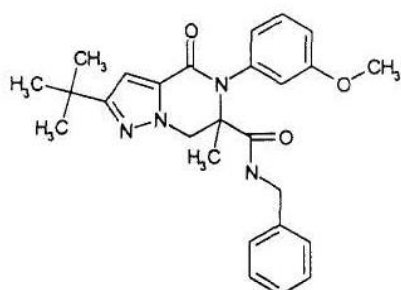
118



456,5403

457

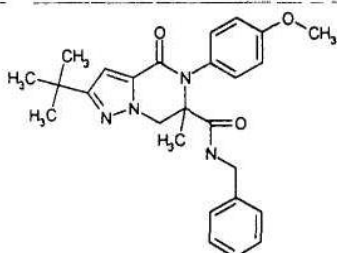
119



446,554

447

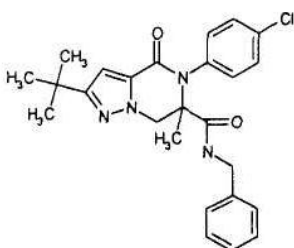
120



446,554

447

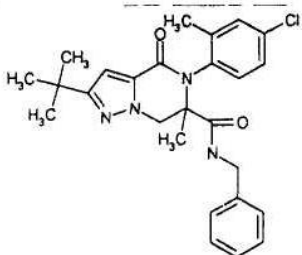
121



450,9725

451

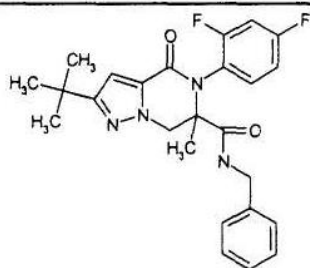
122



464,9996

465

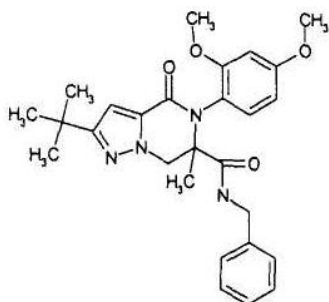
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452,5084

453

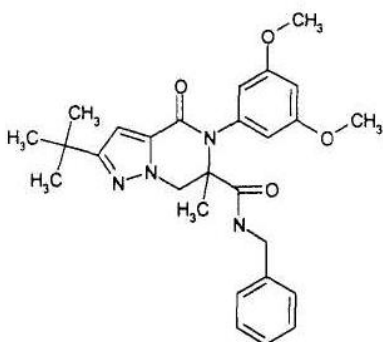
124



476,5805

477

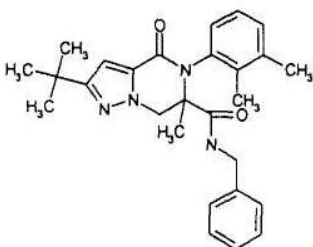
125



476,5805

477

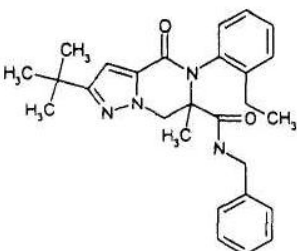
126



444,5817

445

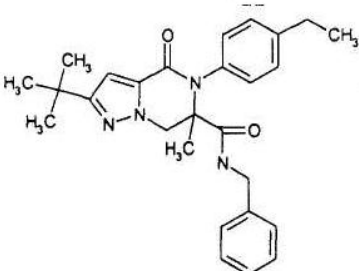
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444,5817

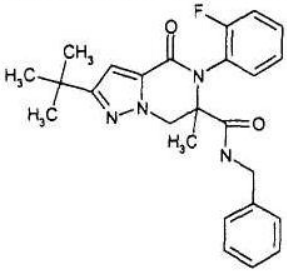
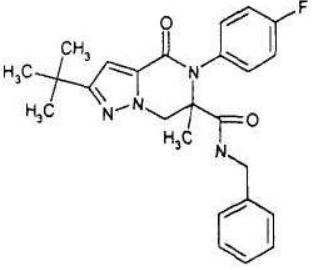
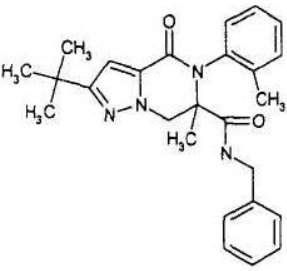
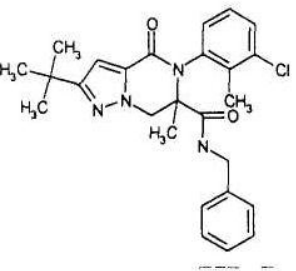
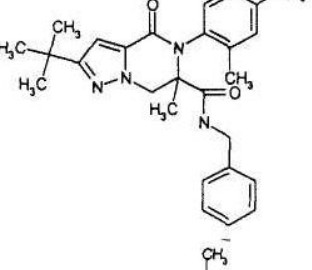
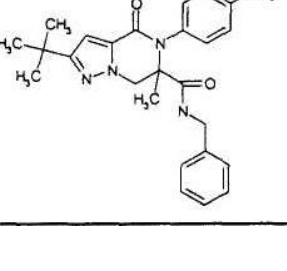
445

128



444,5817

445

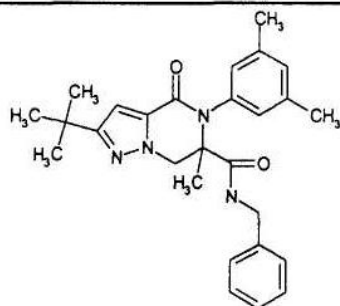
| | | | |
|-----|---|----------|-----|
| 129 |  | 434,5179 | 435 |
| 130 |  | 434,5179 | 435 |
| 131 |  | 430,5546 | 431 |
| 132 |  | 464,9996 | 465 |
| 133 |  | 444,5817 | 445 |
| 134 |  | 444,5817 | 445 |

135

84447

136

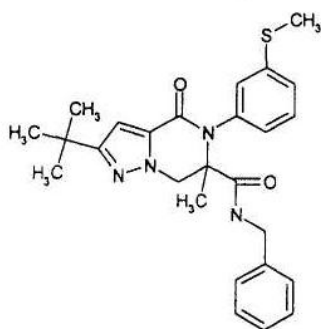
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444,5817

445

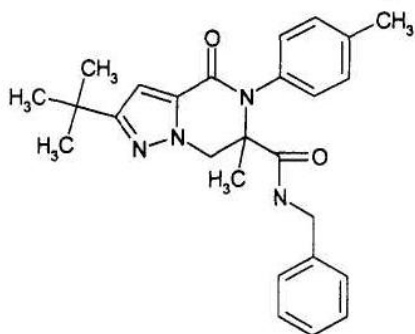
136



462,6186

463

137

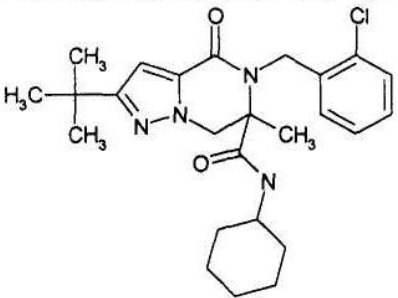
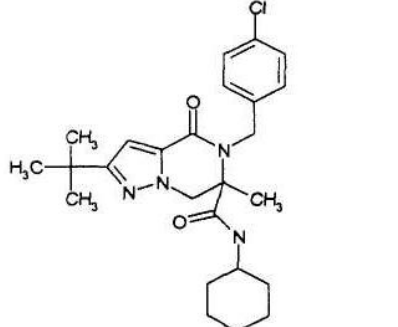
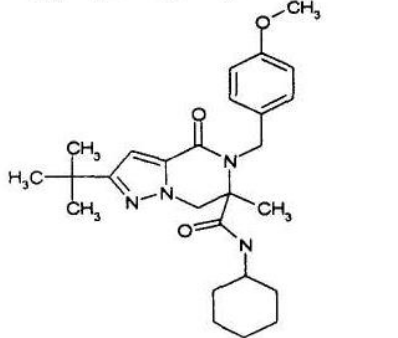
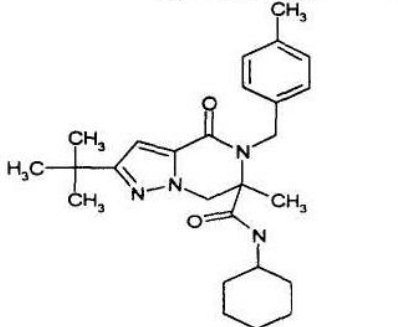
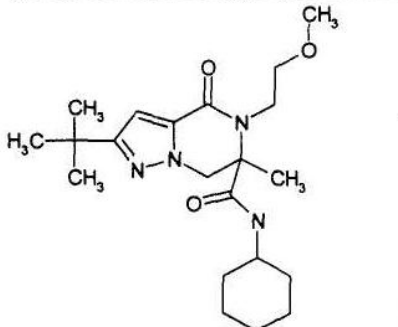


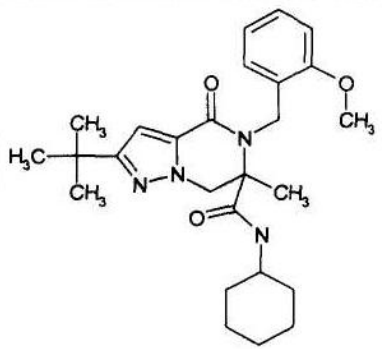
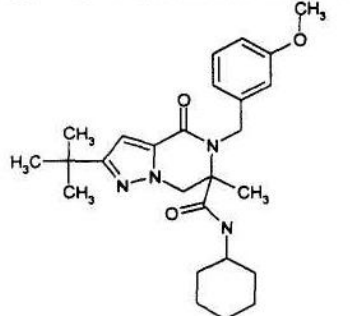
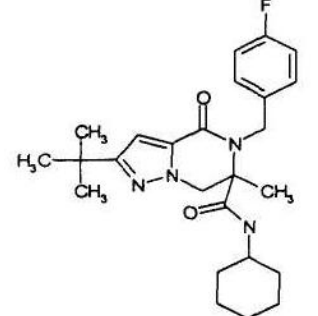
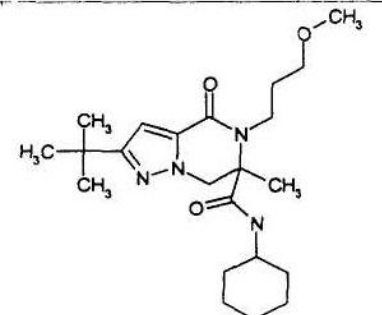
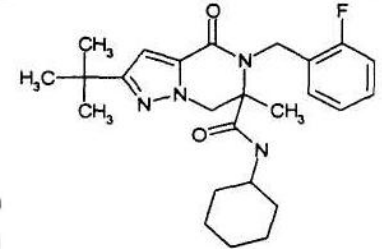
430,5546

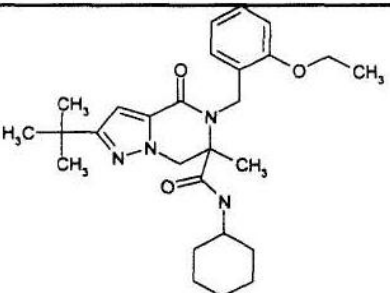
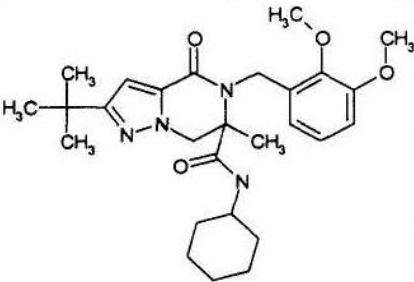
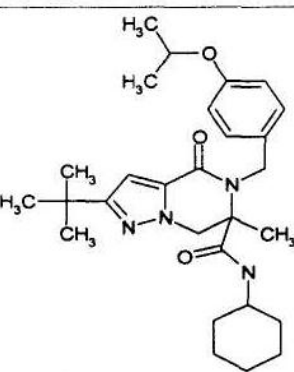
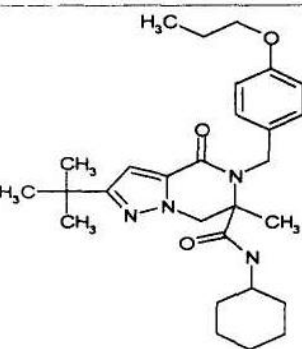
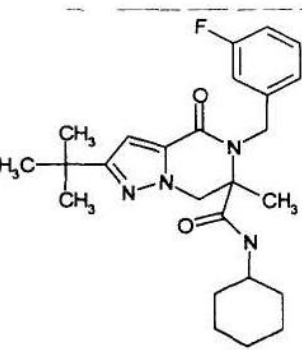
431

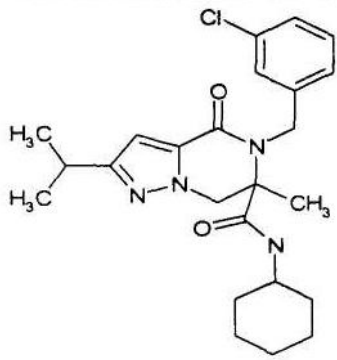
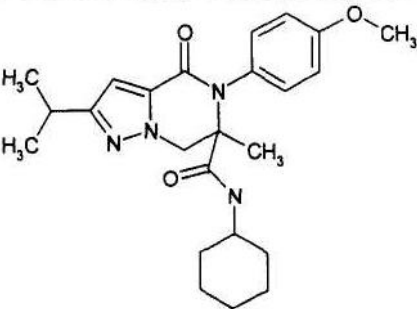
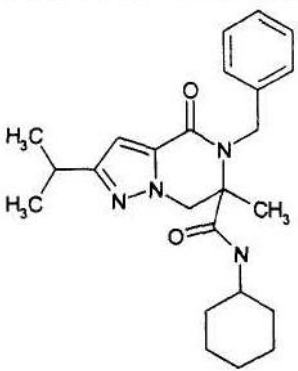
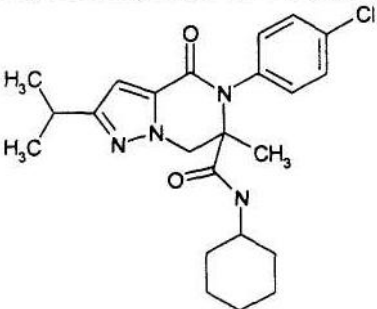
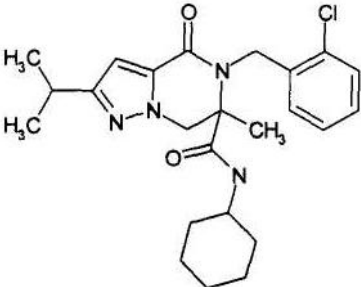
Таблица 1.05(2)

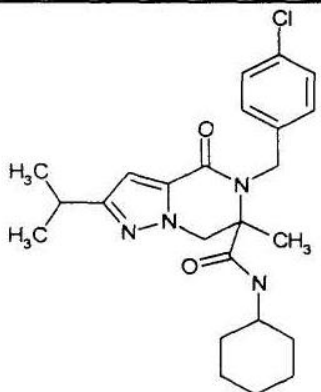
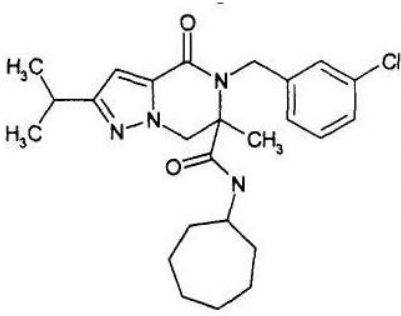

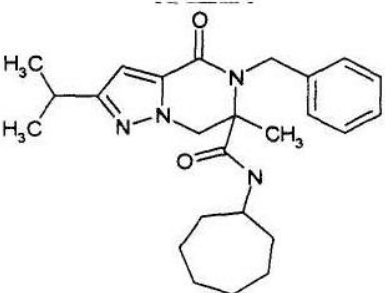
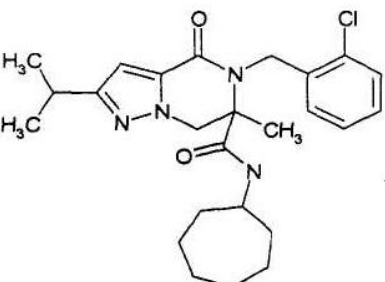
| № п.п. | Формула | Мол.масса | Мас -спектр, m/z (M+1), ПМР спектр |
|--------|---------|-----------|--|
| 1 | | 457,0204 | 458 |
| 2 | | 438,5747 | LC MS, m/z: 439 (M+1) 1H NMR: 1.00-1.75 (m, 24H, Alk), 3.46-3.58 (br s, 1H, NHCH), 3.81 (s, 3H, OMe), 4.29-4.35, 4.93-5.00 (dd, 2H, NCH2, J=13.9), 6.52 (s, 1H, CH(pyrazol)), 6.83-6.90 (m, 2H, 2CH(PhOMe)), 6.96 (s, 1H, CH(PhOMe)), 7.23-7.30 (m, 2H, 2CH(PhOMe)), 7.55-7.61 (m, 1H, NH .. |
| 3 | | 438,5747 | LC MS, m/z: 439 (M+1). 1H NMR: 1.00-1.76 (m, 24H, Alk), 3.45-3.55 (m, 1H, NHCH), 3.82 (s, OMe), 4.28-4.34, 4.93-5.00 (dd, 2H, NCH2, J=13.9), 6.5 (s, 1H, CH(pyrazol)), 6.85-6.90, 7.22-7.27 (dd, 4H, 4CH(p-PhOMe), J=9.3), 7.53-7.58 (m, 1H, NH) |
| 4 | | 422,5753 | 423 |

| | | |
|--|----------|--|
| <p>5</p>  | 457,0204 | 458 |
| <p>6</p>  | 457,0204 | <p>LC MS, m/z: 458 (M+1). ¹H NMR: 0.93-1.72 (m, 24H, Alk), 3.40-3.50 (m, 1H, NHCH), 4.07-4.11, 5.19-5.28 (dd, 2H, NCH₂, J=12.9), 4.11-4.16, 4.84-4.9 (dd, 2H, CH₂Ph, J=14.2), 6.53 (s, 1H, CH(pyrazol)), 7.21-7.25, 7.25-7.21 (dd, 4H, 4CH(p-ClPh), J=8.9), 7.39-7.44 (m, 1H, NH)</p> |
| <p>7</p>  | 452,6018 | 453 |
| <p>8</p>  | 436,6024 | 437 |
| <p>9</p>  | 390,5301 | <p>LC MS, m/z: 391 (M+1) ¹H NMR: 1.04-1.3 (m, 17H, Alk), 1.55-1.69 (m, 8H, Alk), 3.33 (s, 3H, OMe), 3.43-3.62 (m, 5H, Alk), 4.02-4.08, 4.75-4.81 (dd, 2H, NCH₂, J=13.2), 6.47 (s, 1H, CH(pyrazol)), 7.38-7.44 (m, 1H, NH)</p> |

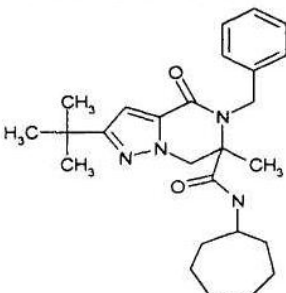
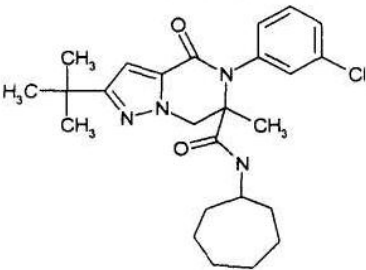
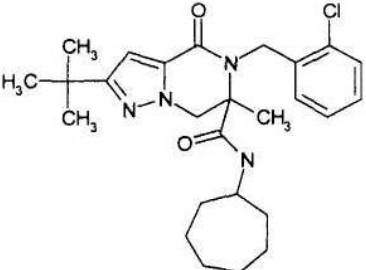
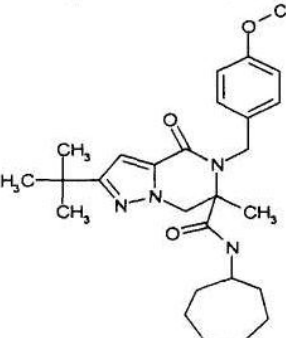
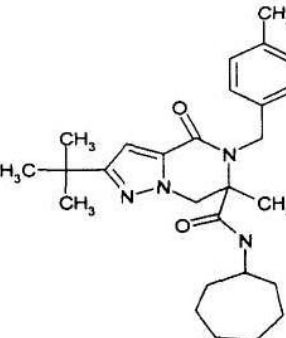
| | | | |
|----|---|----------|--|
| 10 |  | 452,6018 | 453 |
| 11 |  | 452,6018 | 453 |
| 12 |  | 440,5658 | 441 |
| 13 |  | 404,5572 | LC MS, m/z: 405 (M+1). ¹ H NMR. 1.03-1.32 (m, 14H, Alk), 1.50-1.86 (m, 10H, Alk), 3.18-3.26 (m, 2H, Alk), 3.27 (s, 3H, OMe), 3.33-3.40 (m, 2H, Alk), 3.41-3.60 (m, 2H, Alk), 4.01-4.08, 4.71-4.77 (dd, 2H, NCH ₂ , J=3.17), 6.45 (s, 1H, CH(pyrazol)), 7.42-7.49 (m, 1H, NH) |
| 14 |  | 440,5658 | 441 |

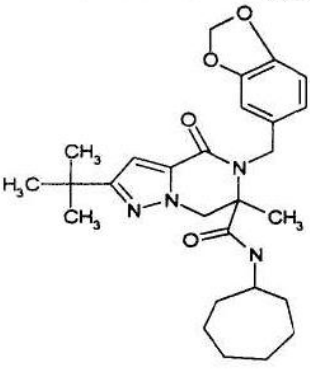
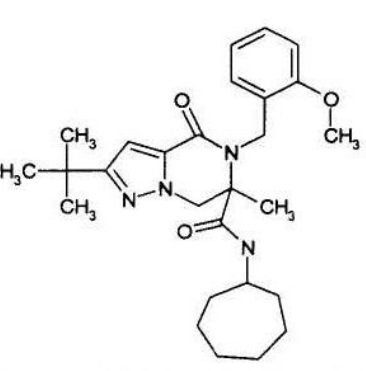
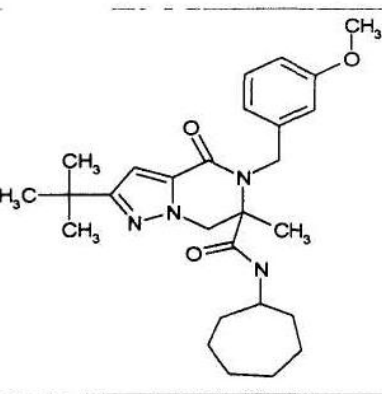
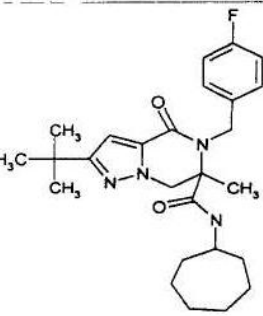
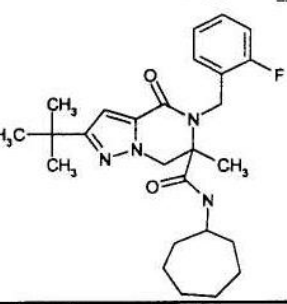
| | | | |
|----|---|----------|-----|
| 15 |  | 466,6289 | 467 |
| 16 |  | 482,6283 | 483 |
| 17 |  | 480,656 | 481 |
| 18 |  | 480,656 | 481 |
| 19 |  | 440,5658 | 441 |

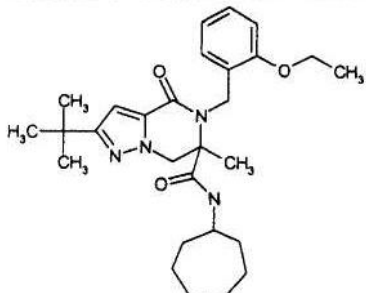
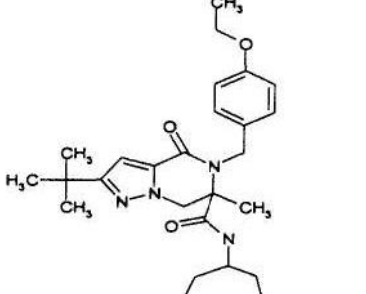
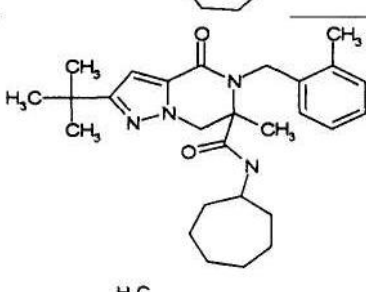
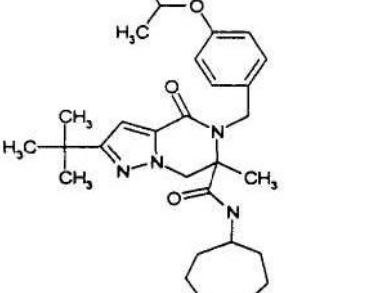
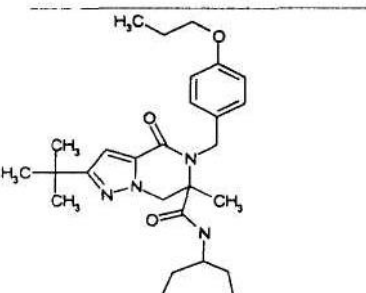
| | | |
|---|----------|--|
| <p>20</p>  | 442,9933 | <p>LC MS, m/z: 443 (M+1). ¹H NMR: 0.97-1.75 (m, 24H, Alk), 3.41-3.51 (m, 1H, NHCH), 4.11-4.18 (m, 2H, Alk), 4.85-4.91, 5.19-5.26 (dd, 2H, NCH₂, J=3.5), 6.52 (s, 1H, CH(pyrazol)), 7.16-7.33 (m, 5H, Ar), 7.47-7.54 (m, 1H, NH)</p> |
| <p>21</p>  | 424,5476 | <p>LC MS, m/z: 425 (M+1). ¹H NMR 1.00-1.74 (m, 24H, Alk), 3.43-3.52 (m, 1H, NHCH), 3.8 (s, 3H, OMe), 4.25-4.32, 4.87-4.94 (dd, 2H, NCH₂, J=13.8), 6.44 (s, 1H, CH(pyrazol)), 6.82-6.89, 7.19-7.25 (dd, 2H, (p-OMePh)), J=8), 7.53-7.59 (m, 1H, NH)</p> |
| <p>22</p>  | 408,5482 | 409 |
| <p>23</p>  | 428,9662 | <p>LC MS, m/z: 429 (M+1) ¹H NMR 1.00-1.78 (m, 22H, Alk), 3.43-3.55 (m, 1H, NHCH), 4.31-4.37, 4.91-4.98 (dd, 2H, NCH₂, J=12,7), 6.48 (s, 1H, CH(pyrazol)), 7.30-7.45 (m, 4H, Ar), 7.63-7.69 (m, 1H, NH)</p> |
| <p>24</p>  | 442,9933 | 443 |

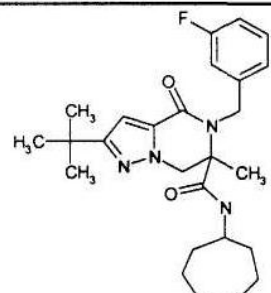
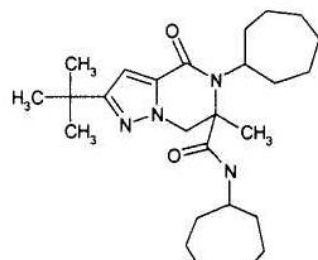
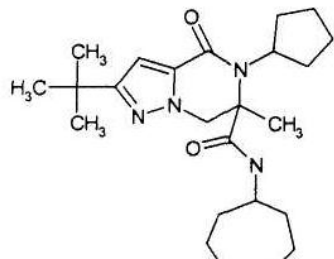
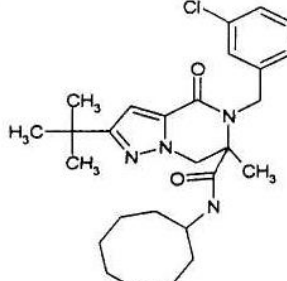
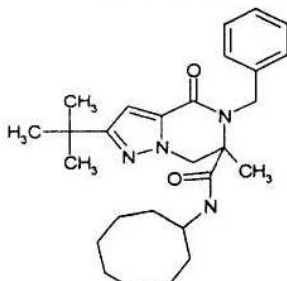
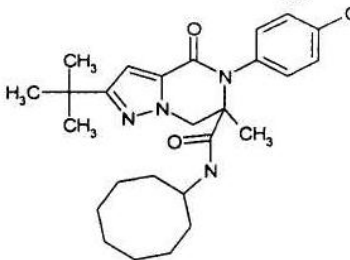
| | | |
|---|----------|---|
| <p>25</p>  | 442,9933 | <p>LC MS, m/z: 443 (M+1). ¹H NMR: 0.93-1.74 (m, 22H, Alk), 2.86-2.95 (m, 1H, Alk), 3.37-3.50 (m, 1H, NHCH), 4.04-4.14 (m, 2H, CH(CH₂Ph)), 4.80-4.88 (d, 1H, J=13.8), 5.20-5.28 (d, 1H, CH, CH₂Ph, J=16.7), 6.46-6.51 (m, 1H, CH(pyrazol)), 7.20-7.26, 7.26-7.31 (dd, 4H, p-ClPh, J=7.9), 7.43-7.48 (m, 1H, NH)</p> |
| <p>26</p>  | 457,0204 | 458 |
| <p>27</p>  | 438,5747 | <p>LC MS, m/z: 439 (M+1). ¹H NMR: 1.00-1.75 (m, 25H, Alk), 2.86-3.00 (m, 9H, (H₂O+Alk)), 3.59-3.70 (m, 1H, NHCH), 3.8 (s, 3H, OMe), 4.24-4.32, 4.87-4.95 (dd, 2H, NHCH, J=13.7), 6.44 (s, 1H, CH(pyrazol)), 6.83-6.89, 7.19-7.26 (dd, 4H, p-OMePh, J=9), 7.58-7.65 (m, 1H, NH)</p> |
| <p>28</p>  | 422,5753 | <p>LC MS, m/z: 423 (M+1). ¹H NMR: 1.08-1.69 (m, 25H, Alk), 2.77-3.00 (m, 7H, (H₂O+Alk)), 3.55-3.66 (m, 1H, CHNH), 4.00-4.14 (m, 2H, CH(CH₂Ph)), 4.79-4.88 (d, 1H, CH₂Ph, J=13.4), 5.23-5.33 (d, 1H, CHNCH₂, J=15.9), 6.47 (s, 1H, CH(pyrazol)), 7.09-7.13 (m, 5H, Ar), 7.35-7.43 (m, 1H, NH)</p> |
| <p>29</p>  | 457,0204 | <p>LC MS, m/z: 458 (M+1). ¹H NMR: 1.20-1.75 (m, 21H, Alk), 2.90-2.99 (m, 1H, CH(i-Pr)), 3.62-3.72 (m, 1H, CONHCH), 4.16-4.26 (m, 2H, CH₂Ph), 4.89-4.97, 5.18-5.26 (dd, 2H, CH₂-cycle, J=13.3), 6.51 (s, CH(pyrazol)), 7.15-7.24 (m, 2H, o-ClPh), 7.29-7.35 (m, 2H, o-ClPh), 7.53-7.58 (m, 1H, NH)</p> |

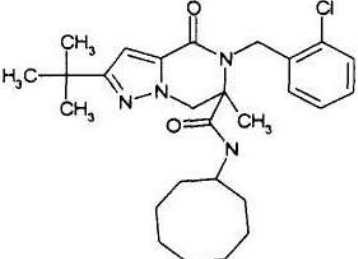
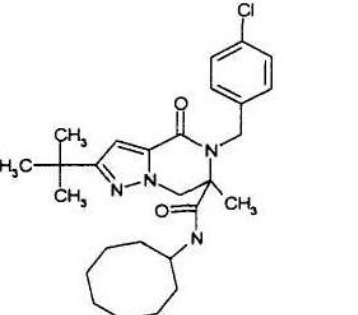
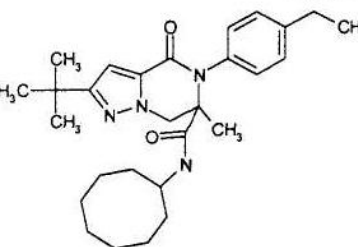
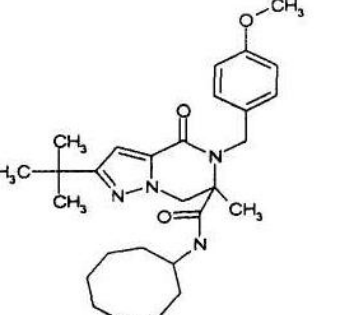
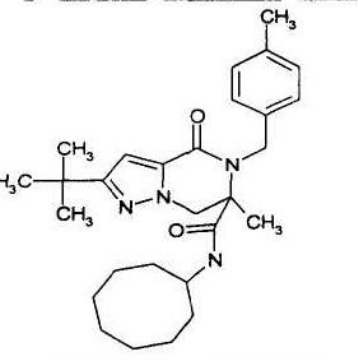
| | | | |
|----|--|----------|---|
| 30 | | 457,0204 | 458 |
| 31 | | 480,656 | 481 |
| 32 | | 440,5658 | 441 |
| 33 | | 428,6232 | LC MS, m/z: 429 (M+1). ¹ H NMR: 1.18-2.00 (m, 36H, Alk), 2.3-2.47 (m, 2H, Alk), 2.79-2.99 (m, 10H, (H ₂ O+Alk)), 3.76-3.89 (m, 1H, CHNH), 3.95-4.03, 4.55-4.62 (dd, 2H, NCH ₂ , J=13.3), 6.44 (s, 1H, CH(pyrazol)), 7.94-8.00 (m, 1H, NH) |
| 34 | | 471,0475 | LC MS, m/z: 472 (M+1). ¹ H NMR: 1.16-1.74 (m, 33H, Alk), 3.58-3.69 (m, 1H, NHCH), 4.12-4.21 (m, 2H, CH(NCH ₂), CH(CH ₂ Ph)), 4.88-4.95 (d, 1H, CH(CH ₂ N), J=12.6), 5.17-5.25 (d, 1H, CH(CH ₂ Ph), J=16.3), 6.56 (s, 1H, CH(pyrazol)), 7.16-7.34 (m, 5H, Ar), 7.50-7.56 (m, 1H, NH) |
| 35 | | 452,6018 | LC MS, m/z: 453 (M+1). ¹ H NMR: 1.10-1.76 (m, 32H, Alk), 3.62-3.73 (m, 1H, NHCH), 3.83 (s, 3H, OMe), 4.28-4.35, 4.93-5.00 (dd, 2H, NCH ₂ , J=13.4), 6.49 (s, 1H, CH(pyrazol)), 6.86-6.91, 7.22-7.28 (dd, 4H, Ar, J=9.2), 7.62-7.67 (m, 1H, NH) |

| | | | |
|----|---|----------|---|
| 36 |  | 436,6024 | 437 |
| 37 |  | 457,0204 | LC MS, m/z 458 (M+1) 1H NMR 1.53-1.80 (m, 31H, Alk), 3.63-3.71 (m, 1H, NHCH), 4.35-4.41, 4.97-5.04 (dd, 2H, NCH2, J=13.1), 6.53 (s, 1H, CH(pyrazol)), 7.3-7.5 (m, 4H, ClPh), 7.6-7.81 (m, 1H, NH) |
| 38 |  | 471,0475 | 472 |
| 39 |  | 466,6289 | 467 |
| 40 |  | 450,6295 | 451 |

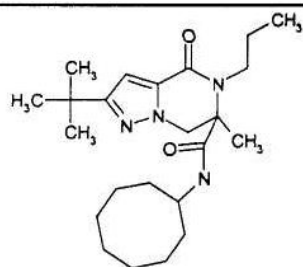
| | | |
|---|----------|--|
| <p>41</p>  | 480,6124 | 481 |
| <p>42</p>  | 466,6289 | <p>LC MS, m/z: 467 (M+1). ¹H NMR: 1.55-1.68 (m, 30H, Alk), 3.6-3.69 (m, 1H, NHCH), 3.87 (s, 3H, OMe), 4.13-4.24 (m, 2H, CH(CH₂Ph)CH(NCH₂)), 4.87-4.93 (d, 1H, CHNCH₂, J=12.9), 5.02-5.09 (d, 1H, CHCH₂Ph, J=16.8), 6.51 (s, 1H, CH(pyrazol)), 6.80-6.89 (m, 2H, Ar), 7.12-7.20 (m, 2H, Ar), 7.35-7.43 (m, 1H, NH)</p> |
| <p>43</p>  | 466,6289 | 467 |
| <p>44</p>  | 454,5929 | 455 |
| <p>45</p>  | 454,5929 | 455 |

| | | | |
|----|---|----------|-----|
| 46 |  | 480,656 | 481 |
| 47 |  | 480,656 | 481 |
| 48 |  | 450,6295 | 451 |
| 49 |  | 494,6831 | 495 |
| 50 |  | 494,6831 | 495 |

| | | |
|---|-----------------|---|
| <p>51</p>  | <p>454,5929</p> | <p>455</p> |
| <p>52</p>  | <p>442,6502</p> | <p>LC MS, m/z: 443 (M+1). ¹H NMR: 1.20-2.00 (m, 35H, Alk), 2.30-2.46 (m, 3H, Alk), 2.79-2.89 (m, 2H, Alk), 3.77-3.86 (m, 1H, NHCH), 3.95-4.01, 4.55-4.62 (dd, 2H, CH₂N, J=13.3), 6.46 (s, 1H, CH(pyrazol)), 7.91-7.97 (m, 1H, NH)</p> |
| <p>53</p>  | <p>414,5961</p> | <p>LC MS, m/z: 415 (M+1). ¹H NMR: 1.08-1.96 (m, 36H, Alk), 2.01-2.12 (m, 1H, Alk), 2.24-2.32 (m, 1H, Alk), 3.20-3.31 (m, 1H, Alk), 3.75-3.86 (m, 1H, NHCH), 3.98-4.05, 4.51-4.58 (dd, 2H, NCH₂, J=12.3), 6.48 (s, 1H, pyrazol), 7.91-7.98 (m, 1H, NH)</p> |
| <p>54</p>  | <p>485,0745</p> | <p>486</p> |
| <p>55</p>  | <p>450,6295</p> | <p>451</p> |
| <p>56</p>  | <p>471,0475</p> | <p>LC MS, m/z: 472 (M+1). ¹H NMR: 1.14-1.69 (m, 30H, Alk), 3.69-3.79 (m, 1H, Alk), 4.32-4.38, 4.98-5.04 (dd, 2H, NCH₂, J=13.6), 6.25 (s, 1H, CH(pyrazol)), 7.34-7.41 (m, 4H, p-ClPh), 7.66-7.72 (m, 1H, NH)</p> |

| | | |
|---|----------|---|
| <p>57</p>  | 485,0745 | 486 |
| <p>58</p>  | 485,0745 | <p>LC MS, m/z: 486 (M+1). ¹H NMR: 1.20-1.65 (m, 30H, Alk), 3.65-3.75 (m, 1H, NHCH), 4.10-4.20 (m, 2H, CHN(CH₂)CH(CH₂Ph)), 4.87-4.94 (d, 1H, CH(NCH₂), J=13.7), 5.2-5.3 (d, 1H, CH(CH₂Ph), J=16.9), 6.54 (s, 1H, CH(pyrazol)), 7.23-7.33 (m, 4H, Ar), 7.48-7.51 (m, 1H, NH)</p> |
| <p>59</p>  | 464,6566 | <p>LC MS, m/z: 465 (M+1) ¹H NMR: 1.23-1.70 (m, 33H, Alk), 2.66-2.74 (q, 2H, p-EtPh, J=7.2), 3.70-3.79 (m, 1H, NHCH), 4.29-4.38, 4.96-5.03 (dd, 2H, NCH₂, J=14.5), 6.53 (s, 1H, CH(pyrazol)), 7.18-7.23, 7.23-7.28 (dd, 4H, Ar, J=7.2), 7.60-7.69 (m, 1H, NH)</p> |
| <p>60</p>  | 480,656 | 481 |
| <p>61</p>  | 464,6566 | 465 |

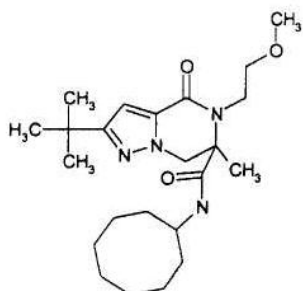
62



402,5849

LC MS, m/z 403 (M+1) ¹H NMR 1.20-1.63 (m, 30H, Alk), 1.78-1.87 (m, 2H, Alk), 3.21-3.28 (m, 1H, Alk), 3.30 (s, 3H, CH₃OMe), 3.36-3.42 (m, 2H, Alk), 3.53-3.63 (m, 1H, Alk), 3.70-3.79 (m, 1H, CHNH), 4.03-4.1, 4.75-4.82 (dd, 2H, NCH₂, J=13.5), 6.47 (s, 1H, CH(pyrazol)), 7.41-7.49 (m

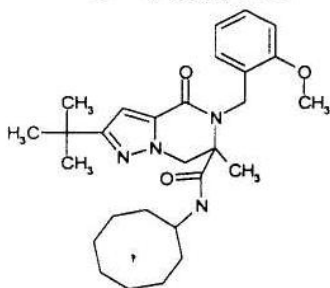
63



418,5843

LC MS, m/z 419 (M+1) ¹H NMR 1.21-1.64 (m, 28H, Alk), 3.31 (s, 3H, OMe), 3.42-3.73 (m, 5H, Alk), 4.01-4.08, 4.75-4.82 (dd, 2H, NCH₂, J=12.6), 6.46 (s, 1H, CH(pyrazol)), 7.43-7.49 (m, 1H, NH)

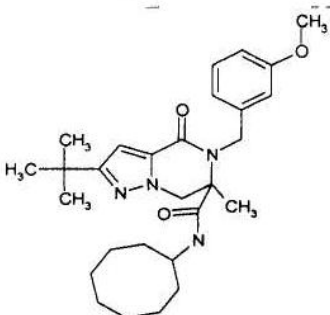
64



480,656

481

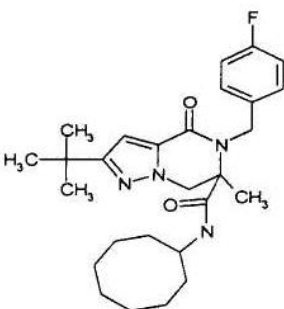
65



480,656

481

66



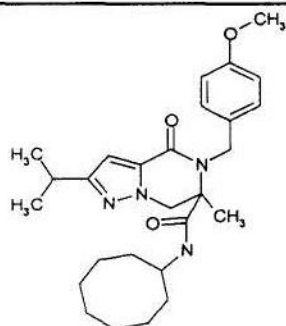
468,6199

469

| | | | |
|----|--|----------|---|
| 67 | | 468,6199 | 469 |
| 68 | | 494,6831 | 495 |
| 69 | | 494,6831 | LC MS, m/z: 495 (M+1). ¹ H NMR: 1.20-1.60 (m, 31H, Alk), 3.63-3.73 (m, 1H, NHCH), 3.95-4.03 (q, 2H, OCH ₂ CH ₃ , J=6.9), 4.03-4.10, 4.83-4.90 (dd, 2H, NHCH, J=12.8), 4.10-4.17, 5.13-5.22 (dd, 2H, CH ₂ Ph, J=16.2), 6.54 (s, 1H, CH(pyrazol)), 6.74-6.79, 7.18-7.23 (dd, 4H, p-EtOPh, J=8.9), 7.23-7.28 (m, 1H, NH) |
| 70 | | 464,6566 | 465 |
| 71 | | 468,6199 | 469 |

| | | | |
|----|--|----------|--|
| 72 | | 471,0475 | 472 |
| 73 | | 436,6024 | 437 |
| 74 | | 471,0475 | 472 |
| 75 | | 471,0475 | LC MS, m/z: 472 (M+1). ¹ H NMR: 1.18-1.70 (m, 24H, Alk), 2.89-3.00 (m, 2H, (H ₂ O+Alk)), 3.65-3.77 (m, 1H, NHCH), 4.08-4.18 (m, 2H, CH(NCH ₂), CH(CH ₂ Ph)), 4.84-4.93 (d, 1H, CH(NCH), J=12.8), 5.21-5.29 (d, 1H, CH(CH ₂ Ph), J=17.1), 6.5 (s, 1H, CH(pyrazol)), 7.25-7.28, 7.28-7.33 (dd, 4H, (p-ClPh), J=8.5), 7.45-7.50 (m, 1H, NH) |
| 76 | | 458,5562 | LC MS, m/z: 459 (M+1). ¹ H NMR: 1.16-1.68 (m, 28H, Alk), 3.67-3.77 (m, 1H, NHCH), 4.24-4.31, 5.02-5.10 (dd, 2H, NCH ₂ , J=13.6), 6.5 (s, 1H, pyrazol), 6.94-7.06 (m, 2H, 2,4-F ₂ Ph), 7.68-7.82 (m, 2H, NH, CH(2,4-F ₂ Ph)) |
| 77 | | 450,6295 | LC MS, m/z: 451 (M+1). ¹ H NMR: 1.66 (m, 30H, Alk), 2.63-2.72 (q, 2H, CH ₂ (p-EtPh), J=7.9), 2.87-2.97 (m, 4H, (H ₂ O+Alk)), 3.68-3.78 (m, 1H, NHCH), 4.24-4.32, 4.89-4.97 (dd, 2H, NCH ₂ , J=13.8), 6.46 (s, 1H, CH(pyrazol)), 7.13-7.19, 7.19-7.25 (dd, 4H, 4CH(p-EtPh), J=7.9), 7.53-7.61 (...) |

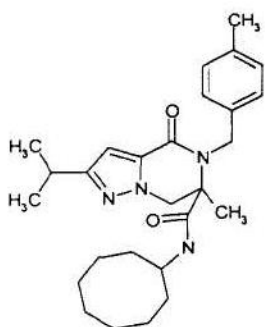
78



466,6289

467

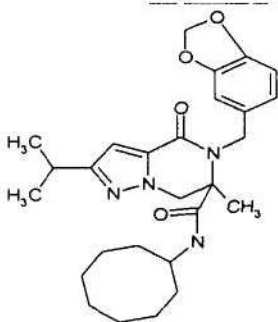
79



450,6295

LC MS, m/z: 451 (M+1). ¹H NMR: 1.09-1.64 (m, 26H, Alk), 2.31 (s, 3H, MePh), 2.86-2.97 (m, 2H, (H₂O+Alk)), 3.62-3.73 (m, 1H, (NHCH)), 4.00-4.13 (m, 2H, CH(NCH₂), CH(CH₂Ph)), 4.81-4.88 (d, 2H, CH(NCH₂), J=13.7), 5.20-5.28 (d, 1H, CH(CH₂Ph), J=16.6, 6.48 (s, 1H, CH(pyrazol)), 7.01-7.07, 7.11-7.18 (dd, 4H, 4CH(p-MePh), J=7.8), 7.29-7.36 (m, 1H, NH).

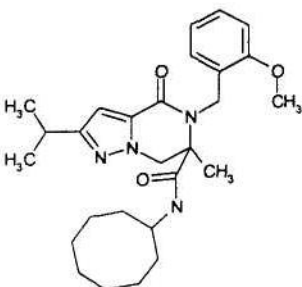
80



480,6124

481

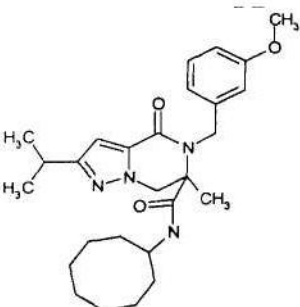
81



466,6289

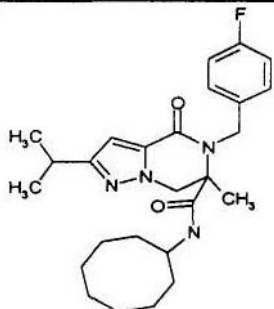
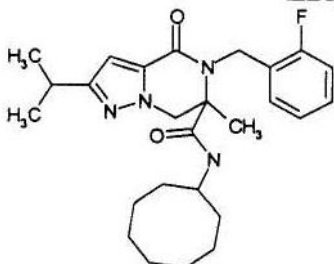
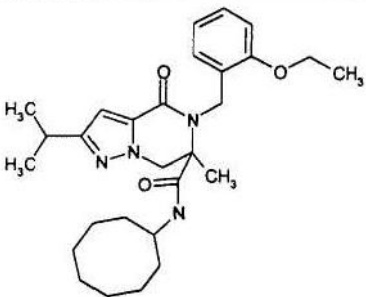
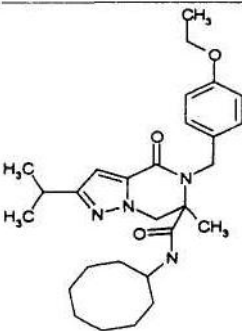
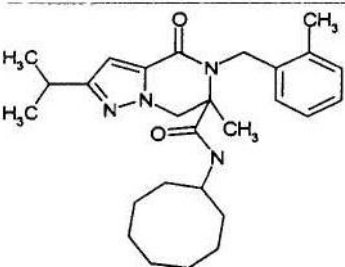
467

82



466,6289

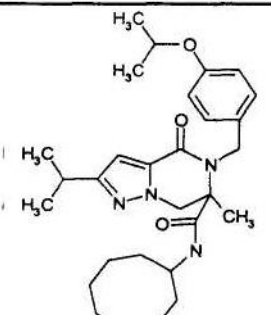
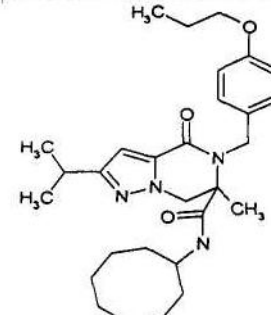

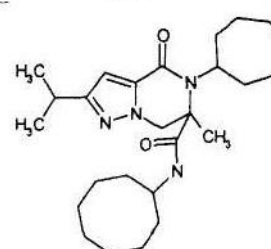
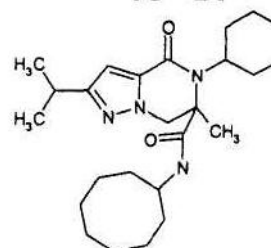

467

| | | | |
|----|---|----------|-----|
| 83 |  | 454,5929 | 455 |
| 84 |  | 454,5929 | 455 |
| 85 |  | 480,656 | 481 |
| 86 |  | 480,656 | 481 |
| 87 |  | 450,6295 | 451 |

171

84447

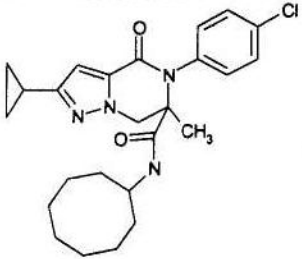
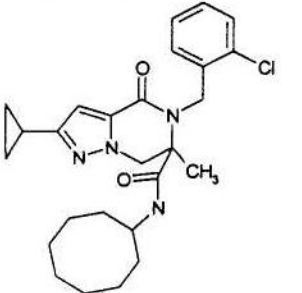
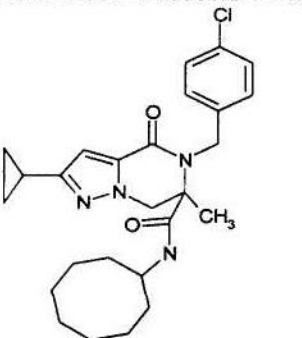
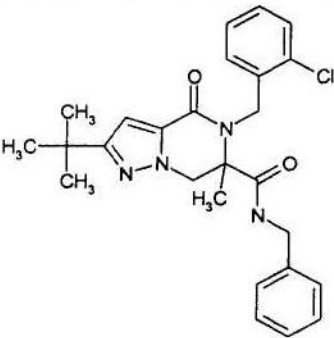
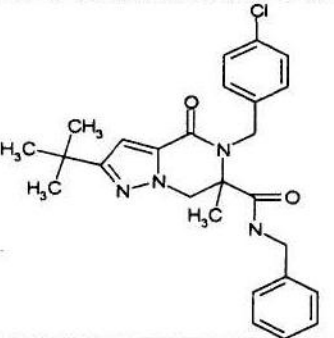
172

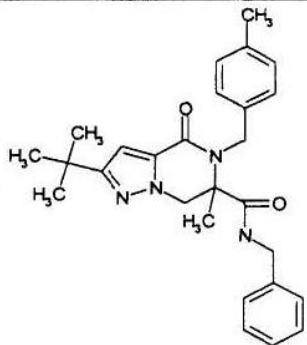
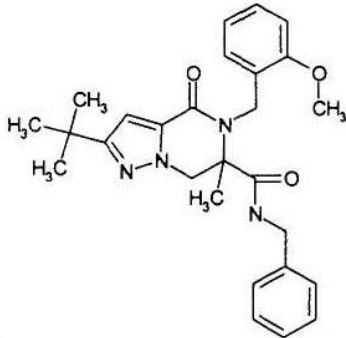
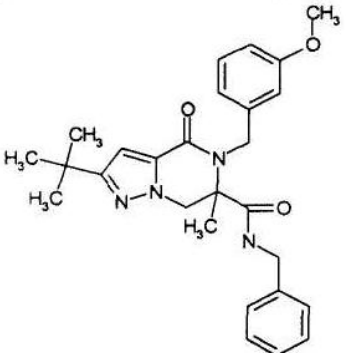
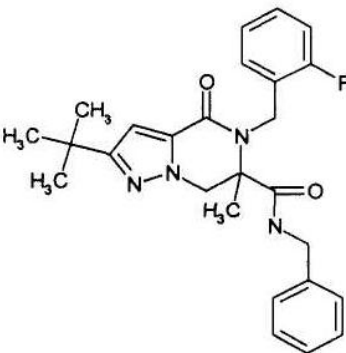
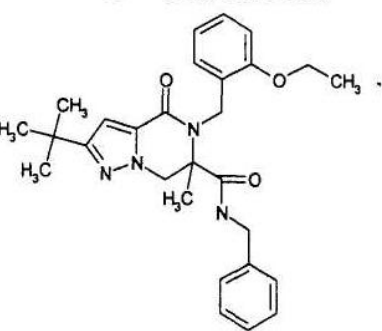
| | | |
|---|----------|--|
| <p>88</p>  | 494,6831 | 495 |
| <p>89</p>  | 494,6831 | 495 |
| <p>90</p>  | 454,5929 | 455 |
| <p>91</p>  | 442,6502 | LC MS, m/z: 443 (M+1). ¹ H NMR: 1.16-1.80 (m, 35H, Alk), 1.88-2.00 (m, 1H, Alk), 2.30-2.47 (m, 2H, Alk), 2.82-3.00 (m, 3H, Alk), 3.80-3.92 (m, 1H, NHCH), 4.00-4.07, 4.56-4.63 (dd, 2H, NCH ₂ , J=13.8), 6.45 (s, 1H, CH(pyrazol)), 7.96-8.04 (m, 1H, NH) |
| <p>92</p>  | 428,6232 | LC MS, m/z: 429 (M+1). ¹ H NMR: 1.09-1.90 (m, 36H, Alk), 2.38-2.54 (m, 4H, DMSO+Alk), 2.60-2.71 (m, 1H, Alk), 2.85-2.96 (m, 6H, H ₂ O+Alk), 1.84-1.93 (m, 1H, NHCH), 3.94-4.00, 4.54-4.61 (dd, 2H, NCH ₂ , J=12.1), 6.44 (s, 1H, CH(pyrazol)), 7.96-8.04 (m, 1H, NH) |
| <p>93</p>  | 450,5859 | LC MS, m/z: 451 (M+1). ¹ H NMR: 0.65-0.92 (m, 4H, Alk), 1.18-1.70 (m, 31H, Alk), 1.83-1.94 (m, 1H, Alk), 3.68-3.78 (m, 1H, NHCH), 3.82 (s, 3H, OMe), 4.22-4.31, 4.85-4.93 (dd, 2H, NCH ₂ , J=13.5), 6.35 (s, 1H, CH(pyrazol)), 6.83-6.90, 7.20-7.28 (dd, 4H, Ar, J=8.6), 7.56-7.63 (m, 1H, NH) |

173

84447

174

| | | | |
|----|---|----------|---|
| 94 |  | 455,0044 | LC MS, m/z: 456 (M+1). ¹ H NMR: 0.63-0.94 (m, 4H, Alk), 1.23-1.70 (m, 20H, Alk), 1.83-1.95 (m, 1H, Alk), 3.67-3.80 (m, 1H, NHCH), 4.27-4.36, 4.88-4.97 (dd, 2H, NCH ₂ , J=12.9), 6.38 (s, 1H, CH(pyrazol)), 7.37 (s, 4H, Ar), 7.66-7.72 (m, 1H, NH) |
| 95 |  | 469,0315 | 470 |
| 96 |  | 469,0315 | 470 |
| 97 |  | 464,9996 | 465 |
| 98 |  | 464,9996 | 465 |

| | | | |
|-----|---|----------|-----|
| 99 |  | 444,5817 | 445 |
| 100 |  | 460,5811 | 461 |
| 101 |  | 460,5811 | 461 |
| 102 |  | 448,545 | 449 |
| 103 |  | 474,6082 | 475 |

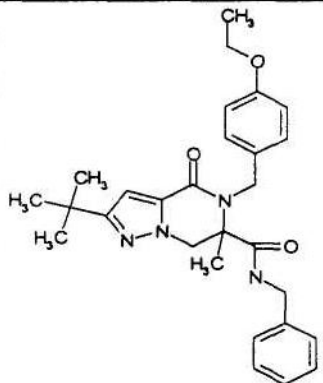
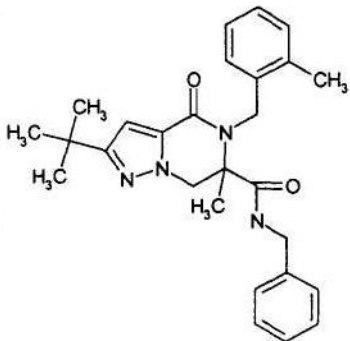
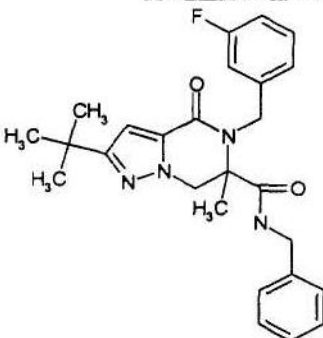
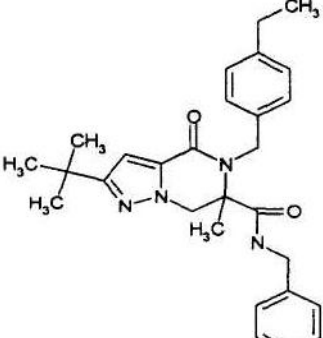
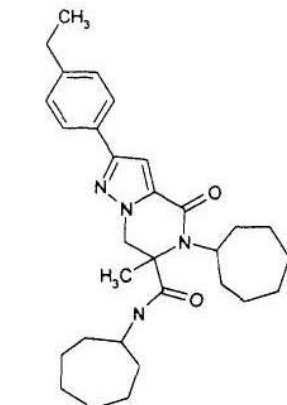
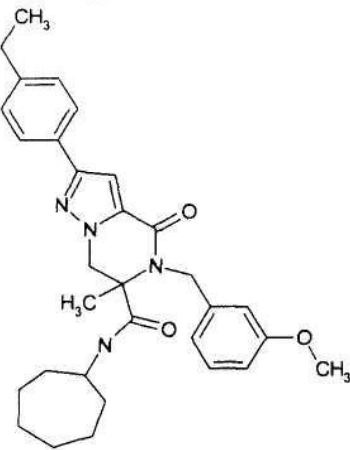
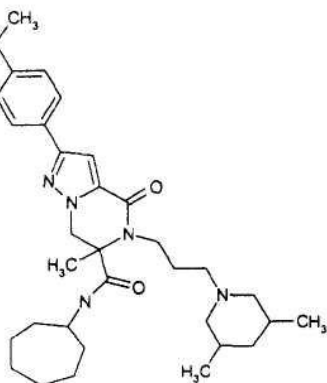
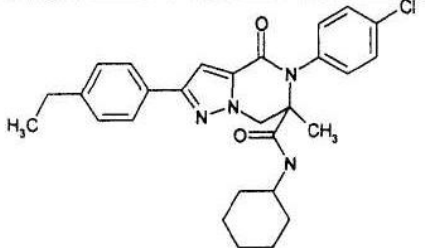
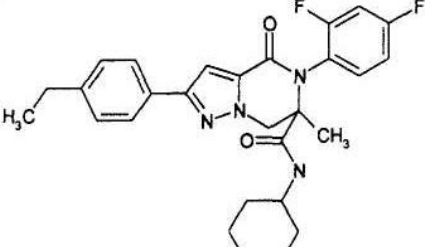
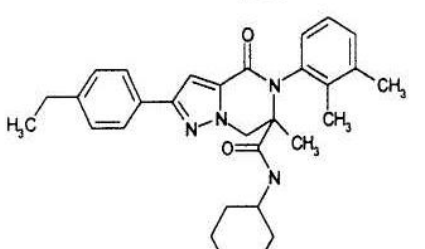
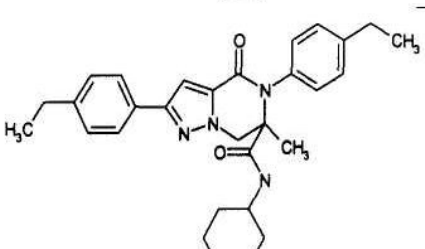
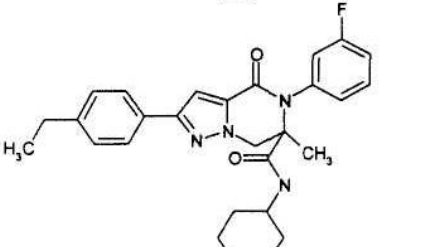
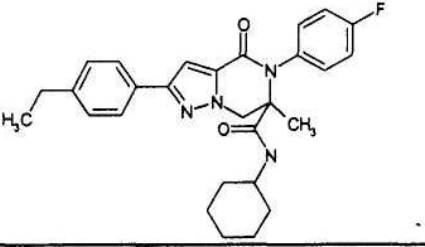
| | | | |
|-----|---|----------|-----|
| 104 |  | 474,6082 | 475 |
| 105 |  | 444,5817 | 445 |
| 106 |  | 448,545 | 449 |
| 107 |  | 458,6088 | 459 |

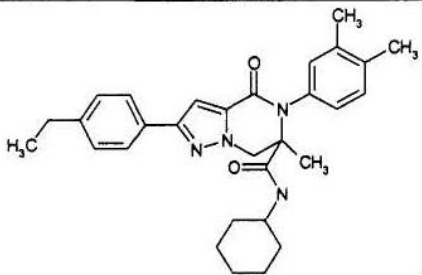
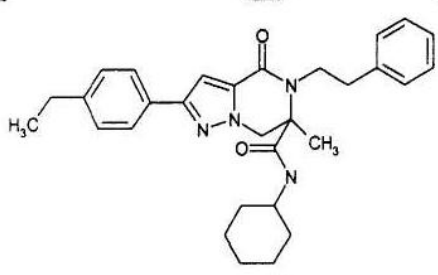
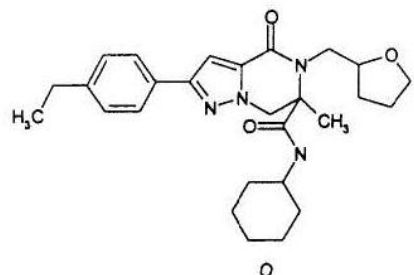
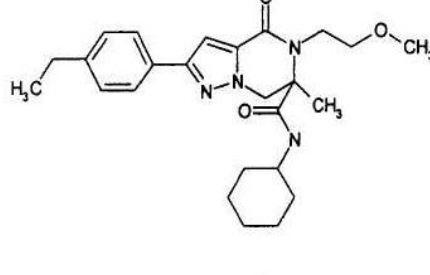
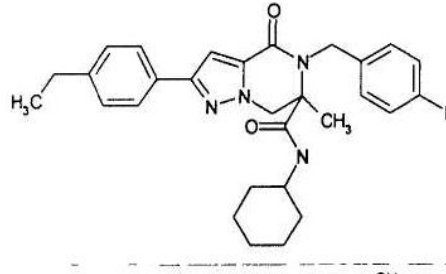
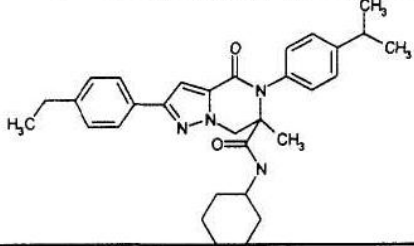
Таблица 1.05(3)

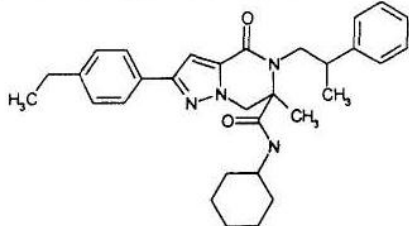
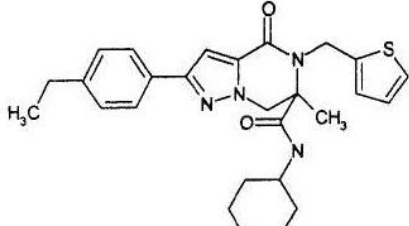
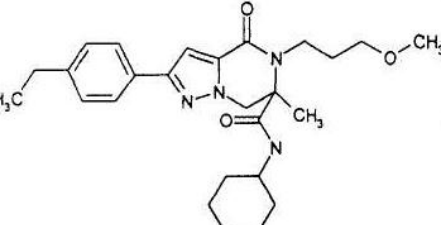
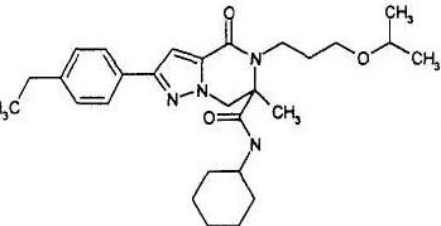
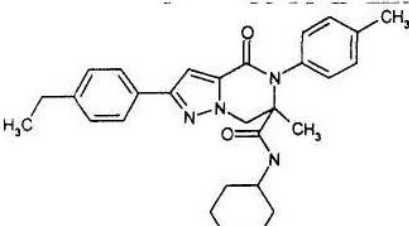
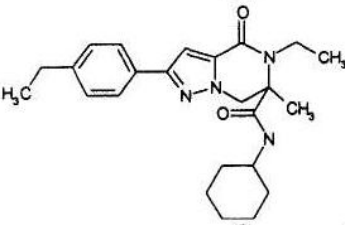
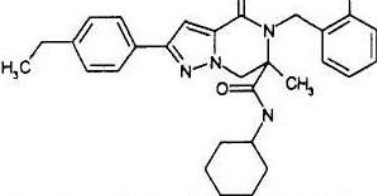
| № п.п | Формула | Мол.наса | Мас -спектр, m/z (M+1), ПМР спектр |
|-------|---|-----------|--|
| 1 |  | 490,69484 | LC MS, m/z: 491 (M+1). ¹ H NMR. 1.26 (t, 3H, CH ₃ (EtPh)); 1.44-2.00 (m, 2CH, Alk); 2.34-2.475 (m, 2H, Alk); 2.6-2.7 (m, 2H, CH ₂ (EtPh)); 2.93 (s, 1H, N-CH); 3.84 (brs, 1H, CO-N-CH); 4.08-4.14 , 4.67-4.72 (dd, 2H, CH ₂ , I = 12.9); 6.97 (s, 1H, CH (pyrazol)); 7.15-7.19 , 7.66-7.70 (dd, 4H, Ar, I = 8.4); 8.062 (brs, 1H, NH); |
| 2 |  | 514,67351 | LC MS, m/z: 515 (M+1). ¹ H NMR. 1.26 (t, 3H, CH ₃ (EtPh)); 1.30-1.72 (m, 13H, Alk); 2.6-2.7 (m, 2H, CH ₂ (EtPh)); 3.63 (brs, 1H, N-CH); 3.77 (s, 3H, CH ₃), 4.103-4.17 , 5.21-5.24 (dd, 2H, N-CH ₂ _Ph, I = 16.5); 4.21-4.27 , 4.94-4.99 (dd, 2H, CH ₂ , I = 13.5); 6.69-6.75 (m, 1H, CH (Ar)); 6.83-6.89 (m, 2H, 2CH (Ar)); 7.05 (s, 1H, CH (pyrazol)); 7.14-7.20 (m, 3H, 3CH (Ar)); 7.45-7.53 (m, 1H, Ar); 7.69 (d, 1H, NH) |
| 3 |  | 547,79078 | 548 |

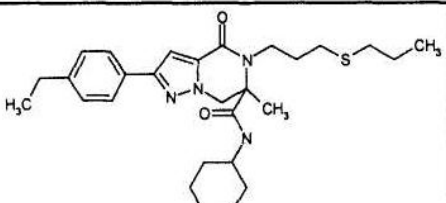
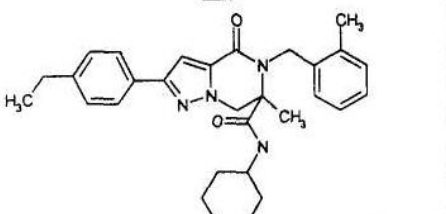
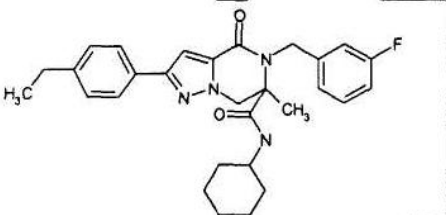
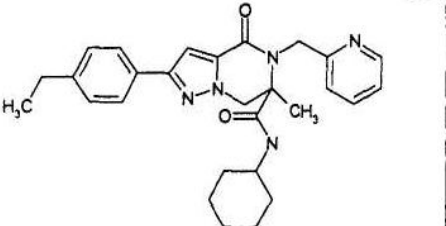
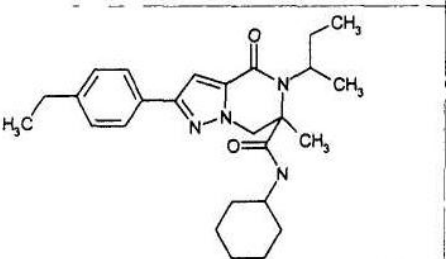
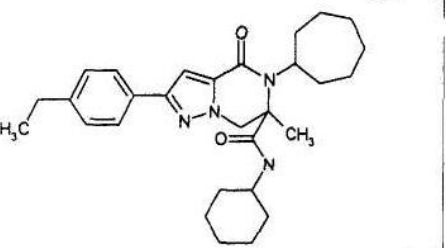
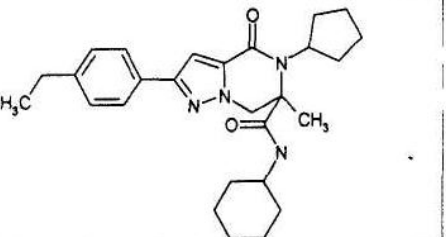
| | | | |
|---|--|-----------|---|
| 4 | | 519,09205 | LC MS, m/z: 520 (M+1). ¹ H NMR: 1.27 (t, 3H, CH ₃ (EtPh)); 1.31-1.79 (m, 13H, Alk); 2.6-2.7 (m, 2H, CH ₂ (EtPh)); 3.66 (brs, 1H, N-CH); 4.19-4.29, 5.204-5.28 (dd, 2H, CH ₂ (öëëë) I = 17.85); 4.31-4.37, 4.99-5.06 (dd, 2H, CH ₂ , I = 13.3); 7.04 (s, 1H, CH (pyrazol)); 7.15-7.29 (m, 4H, 2CH (pEtPh), 2CH (-o-ClPh)); 7.31-7.41 (m, 2H, 2CH (-o-ClPh)); 7.64-7.75 (m, 3H, 2CH (pEtPh), NH) |
| 5 | | 471,60751 | 472 |
| 6 | | 486,61933 | 487 |
| 7 | | 486,61933 | 487 |
| 8 | | 470,61993 | 471 |
| 9 | | 491,03787 | LC MS, m/z: 492 (M+1). ¹ H NMR: 1.00-1.78 (m, 16H, Alk), 2.66 (q, 2H, p-EtPh, J=7.8), 3.44-3.55 (m, 1H, CONHCH), 4.45-4.53, 5.00-5.08 (dd, 2H, CH ₂ -cycle, J=12.9), 7.06 (s, CH(pyrazol)), 7.15-7.20, 7.68-7.73 (dd, 4H, p-EtPh, J=8.1), 7.30-7.41 (m, 3H, m-ClPh), 7.47 (s, 1H, CH(m-ClPh)), 7.73-7.78 (m, 1H, NH) |

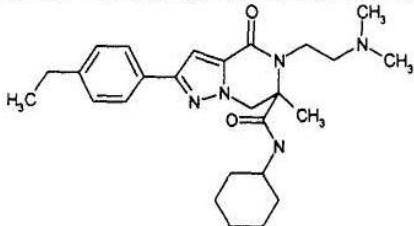
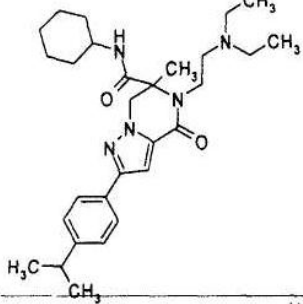
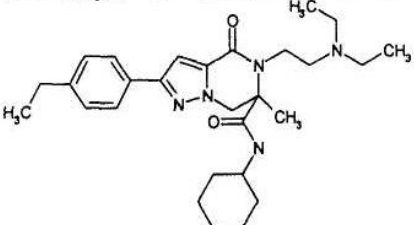
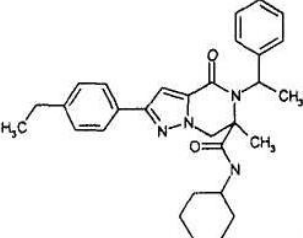
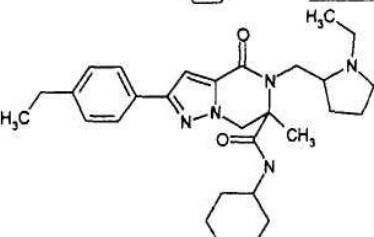
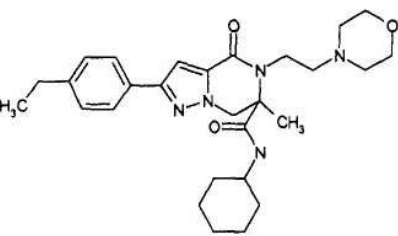
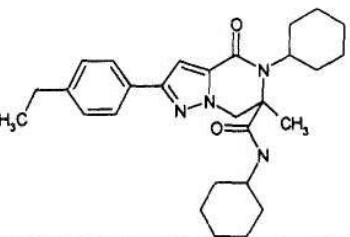
| | | | |
|----|---|-----------|--|
| 10 |  | 491,03787 | 492 |
| 11 |  | 492,5737 | 493 |
| 12 |  | 484,64702 | 485 |
| 13 |  | 484,64702 | LC MS, m/z: 485 (M+1). ¹ H NMR: 1.03-1.74 (m, 18H, Alk), 2.61-2.74 (m, 4H, 2CH ₂ (p-EtPh)), 3.44-3.55 (m, 1H, CONHCH), 4.39-4.49, 4.98-5.05 (dd, 2H, CH ₂ -cycle, J=13.3), 7.026 (s, 1h, CH(pyrazol)), 7.15-7.28 (m, 6H, 6CH(p-EtPh)), 7.59-7.64 (m, 1H, NH), 7.27-7.67 (d, 2H, 2CH, p-EtPh, J=7.3) |
| 14 |  | 474,58327 | 475 |
| 15 |  | 474,58327 | 475 |

| | | | |
|----|--|-----------|---|
| 16 | | 460,58109 | 461 |
| 17 | | 484,64702 | LC MS, m/z 485 (M+1) 1H NMR 0.95-1.72 (m, 16H, Alk), 2.32 (s, 3H, p-MePh), 2.66 (q, 2H, CH2(p-EtPh), J=8.9), 3.39-3.51 (m, 1H, CONHCH), 4.08-4.16, 5.24-5.33 (dd, 2H, CH2-cycle, J=13.2), 7.02-7.10 (m, 3H, CH(pyrazol) 2CH(p-EtPh)), 7.14-7.22 (m, 4H, 4CH(p-MePh)), 7.32-7.39 (m, 1H, NH), 7.69 (d, 2H, 2CH(p-EtPh), J=8.0) |
| 18 | | 498,67411 | 499 |
| 19 | | 470,61993 | 471 |
| 20 | | 484,64702 | 485 |
| 21 | | 484,64702 | 485 |
| 22 | | 422,57533 | 423 |

| | | |
|---|-----------|--|
| <p>23</p>  | 484,64702 | 485 |
| <p>24</p>  | 484,64702 | 485 |
| <p>25</p>  | 464,61297 | 465 |
| <p>26</p>  | 438,57473 | 439 |
| <p>27</p>  | 488,61036 | <p>LC MS, m/z: 489 (M+1) ¹H NMR: 1.00-1.74 (m, 16H, Alk), 2.66 (q, 2H, CH₂(p-EtPh), J=8.1), 3.41-3.53 (m, 1H, CONHCH), 4.09-4.19, 5.23-5.32 (dd, 2H, CH₂-Ph, J=17), 4.20-4.27, 4.92-4.99 (dd, 2H, CH₂-cycle, J=13.8), 6.95-7.06 (m, 3H, 1CH(pyrazol), 2CH(p-EtPh)), 7.15-7.21, 7.66-7.73 (dd, 4H, 4CH(p-EtPh), J=8.2), 7.30-7.37 (m, 2H, 2CH(p-FPh)), 7.45-7.54 (m 1H NH).</p> |
| <p>28</p>  | 498,67411 | 499 |

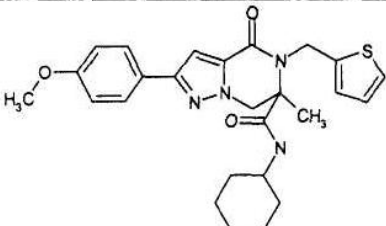
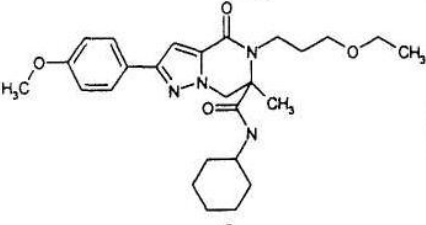
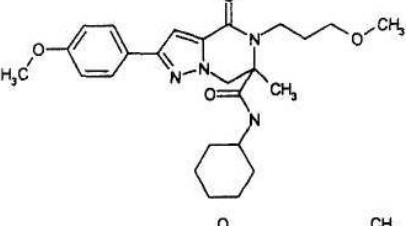
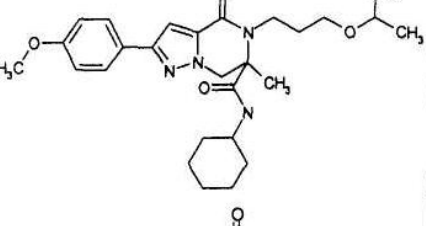
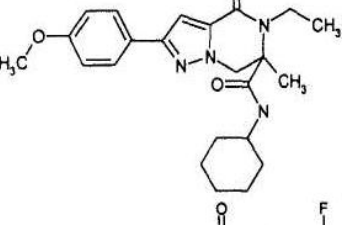
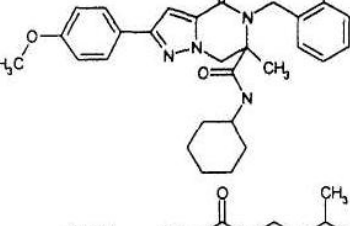
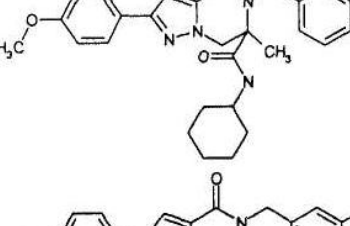
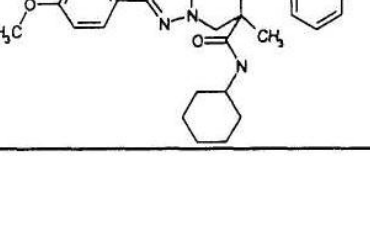
| | | | |
|----|---|-----------|---|
| 29 |  | 498,67411 | 499 |
| 30 |  | 476,64569 | 477 |
| 31 |  | 452,60182 | LC MS, m/z: 453 (M+1). ¹ H NMR 1.04-1.90 (m, 18 H, Alk), 2.65 (q, 2H, CH ₂ (p-EtPh), J=8.4), 3.30 (s, 3H, o-CH ₃), 3.35-3.66 (m, 5H, Alk), 4.14-4.20, 4.82-4.88 (dd, 2H, CH ₂ -cycle, J=13.5), 6.97 (s, 1H, CH(pyrazol)), 7.14-7.19, 7.64-7.69 (dd, 4H, 4CH(p-EtPh), J=8.8), 7.47-7.55 (m, 1H, NH) |
| 32 |  | 480,656 | 481 |
| 33 |  | 470,61993 | 471 |
| 34 |  | 408,54824 | 409 |
| 35 |  | 488,61036 | 489 |

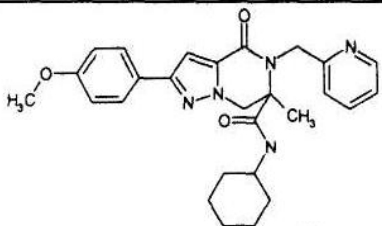
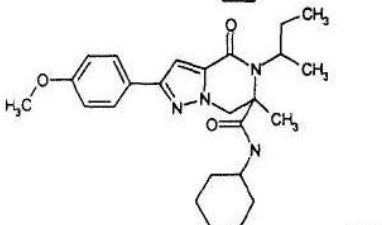
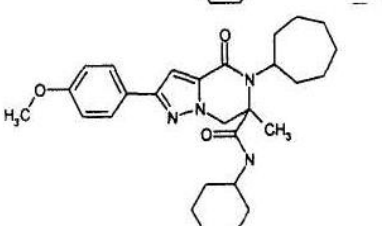
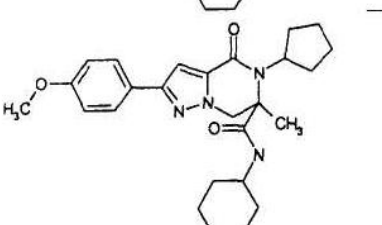
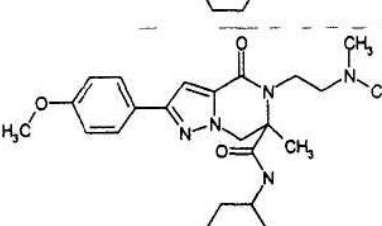
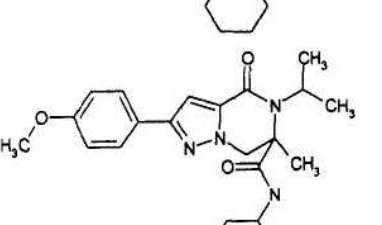
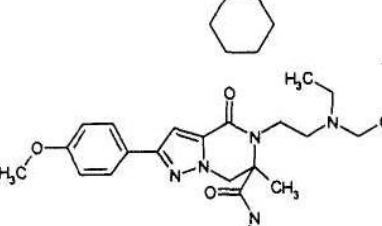
| | | | |
|----|---|-----------|-----|
| 36 |  | 496,7206 | 497 |
| 37 |  | 484,64702 | 485 |
| 38 |  | 488,61036 | 489 |
| 39 |  | 471,60751 | 472 |
| 40 |  | 436,60242 | 437 |
| 41 |  | 476,66775 | 477 |
| 42 |  | 448,61357 | 449 |

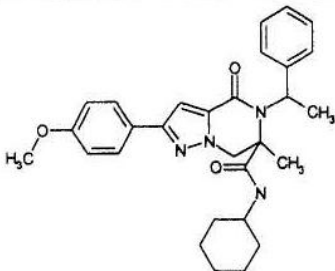
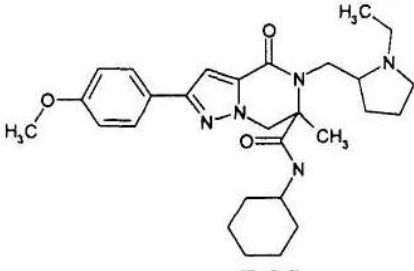
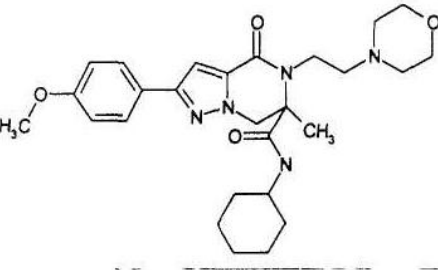
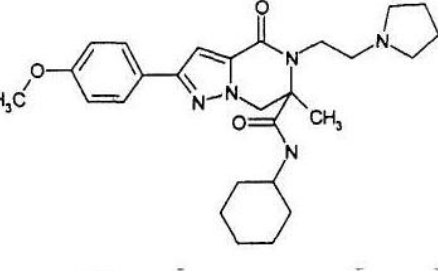
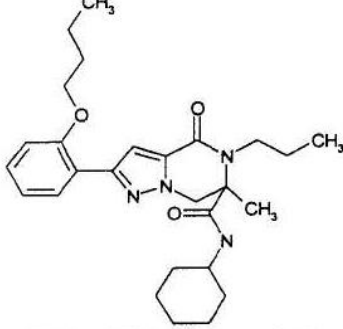
| | | | |
|----|---|-----------|-----|
| 43 |  | 451,61709 | 452 |
| 44 |  | 493,70 | 494 |
| 45 |  | 479,67127 | 480 |
| 46 |  | 484,64702 | 485 |
| 47 |  | 491,68242 | 492 |
| 48 |  | 493,65473 | 494 |
| 49 |  | 462,64066 | 463 |

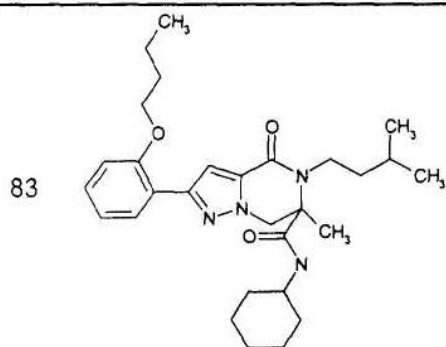
| | | | |
|----|--|-----------|---|
| 50 | | 477,65533 | 478 |
| 51 | | 473,57982 | 474 |
| 52 | | 472,59224 | LC MS, m/z: 473 (M+1). ¹ H NMR: 1.00-1.72 (m, 13H, Alk), 3.4-3.52 (m, 1H, CONHCH), 3.82 (s, 3H, o-CH ₃), 4.11-4.18, 5.30-5.39 (dd, 2H, CH ₂ -Ph, J=8.9), 4.18-4.24, 4.93-4.99 (dd, 2H, CH ₂ -cycle, J=14.0), 6.85-6.90, 7.68-7.74 (dd, 4H, 4CH(p-OMePh), J=8.8), 7.00-7.02 (m, 1H, CH(pyrazol)), 7.16-7.33 (m, 5H, Ph), 7.41-7.47 (m, 1H, NH) |
| 53 | | 493,01018 | 1.02-1.88 (m, 13H, Alk), 3.46-3.56 (m, 1H, CONHCH), 3.82 (s, 3H, OCH ₃), 4.44-4.49, 5.01-5.07 (dd, 2H, CH ₂ -cycle, J=12.5), 6.86-6.91, 7.70-7.75 (dd, 4H, 4CH(p-MeOPh), J=8.4), 7.02 (s, 1H, CH(pyrazol)), 7.31-7.42 (m, 3H, 3CH(m-ClPh)), 7.48 (s, 1H, CH(m-ClPh)), 7.74-7.77 (m, 1H, NH) |
| 54 | | 486,61933 | LC MS, m/z: 487 (M+1). ¹ H NMR: 1.03-1.76 (m, 18H, Alk), 2.69 (q, 2H, PhCH ₂ CH ₃ , J=7.5), 3.82 (s, 3H, MeO), 3.44-3.55 (m, 1H, CONHCH), 4.37-4.43, 4.97-5.03 (dd, 2H, CH ₂ -cycle, J=12.5), 6.85-6.91, 7.69-7.74 (dd, 4H, 4CH(p-OMePh), J=8.6), 6.98 (s, 1H, CH(pyrazol)), 7.16-7.21, 7.21-7.27 (dd, 4H, 4CH(p-EtPh), J=8.0), 7.57-7.62 (m, 1H, NH) |
| 55 | | 462,5534 | 463 |

| | | | |
|----|--|-----------|--|
| 56 | | 486,61933 | LC MS, m/z 487 (M+1) 1H NMR 0.97-1.72 (m, 14H, Alk), 2.33 (s, #h, CH3(p-MePh)), 3.39-3.50 (m, 1H, CONHCH), 3.82 (s, 3H, OMe), 4.08-4.15, 5.24-5.33 (dd, 2H, CH2-cycle, J=12.9), 6.86-6.92, 7.68-7.74 (dd, 4H, 4CH(OMePh), J=8.2), 7.00 (s, 1H, CH(pyrazol)), 7.01-7.09, 7.15-7.21 (dd, 4H, 4CH(p-MePh) J=8.3), 7.34-7.41 (m, 1H, NH) |
| 57 | | 424,54764 | 425 |
| 58 | | 452,60182 | 453 |
| 59 | | 486,61933 | 487 |
| 60 | | 466,58528 | 467 |
| 61 | | 440,54704 | LC MS, m/z 441 (M+1) 1H NMR 1.05-1.33 (m, 5H, Alk), 1.54-1.72 (m, 9H, Alk), 3.39 (s, 3H, CH2OMe), 3.43-3.67 (m, 5H, Alk), 3.81 (s, 3H, MeOPh), 4.10-4.16, 4.83-4.89 (dd, 2H, CH2-cycle, J=13.5), 6.83-6.89, 7.66-7.72 (dd, 4H, 4CH(p-OMePh), J=8.5), 6.93 (s, 1H, CH(pyrazol)), 7.42-7.48 (m, 1H, NH) |
| 62 | | 490,58267 | 491 |

| | | | |
|----|---|-----------|-----|
| 63 |  | 478,618 | 479 |
| 64 |  | 468,60122 | 469 |
| 65 |  | 454,57413 | 455 |
| 66 |  | 482,62831 | 483 |
| 67 |  | 410,52055 | 411 |
| 68 |  | 490,58267 | 491 |
| 69 |  | 486,61933 | 487 |
| 70 |  | 490,58267 | 491 |

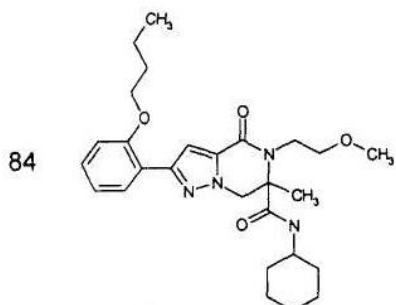
| | | | |
|----|---|-----------|-----|
| 71 |  | 473,57982 | 474 |
| 72 |  | 438,57473 | 439 |
| 73 |  | 478,64006 | 479 |
| 74 |  | 450,58588 | 451 |
| 75 |  | 453,5894 | 454 |
| 76 |  | 424,54764 | 425 |
| 77 |  | 481,64358 | 482 |

| | | |
|---|------------------|---|
| <p>78</p>  | <p>486,61933</p> | <p>487</p> |
| <p>79</p>  | <p>493,65473</p> | <p>494</p> |
| <p>80</p>  | <p>495,62704</p> | <p>LC MS, m/z: 496 (M+1). ¹H NMR 1.04-1.33 (m, 5H, Alk), 1.55-1.75 (m, 8H, Alk), 2.39-2.59 (m, 7H, DMSO, 3NCH₂), 3.37-3.69 (m, 7H, Alk), 3.80 (s, 3H, MeO), 4.12-4.18, 4.79-4.88 (dd, 2H, CH₂-cycle, J=13.8), 6.84-6.89, 7.66-7.72 (dd, 4H, 4CH(OMePh), J=8.5), 6.93 (s, 1H, CH(pyrazol)), 7.57 (d, 1H, NH, J=8.0)</p> |
| <p>81</p>  | <p>479,62764</p> | <p>480</p> |
| <p>82</p>  | <p>466,62891</p> | <p>467</p> |



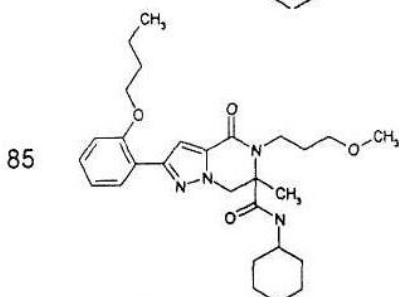
494,68309

495



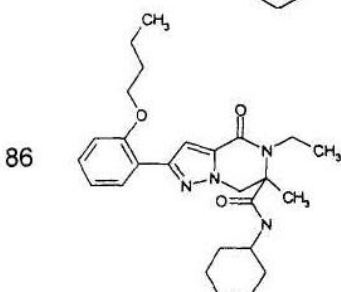
482,62831

LC MS, m/z 483 (M+1) ¹H NMR 1.00-1.34 (m, 9H, Alk), 1.50-1.74 (m, 12H, Alk), 1.85-1.96 (m, 2H, Alk), 2.88-3.01 (m, 2H, (H₂O+Alk)), 3.36 (s, 3H, OMe), 3.43-3.70 (m, 6H, Alk), 4.05-4.12 (m, 2H, Alk), 4.15-4.22, 4.85-4.93 (dd, 2H, NCH₂, J=13.5), 6.88-7.00 (m, 2H, Ar), 7.14-7.25 (m, 2H, Ar), 7.44-7.54 (m, 1H, NH), 7.91-7.96 (m, 1H, Ar)



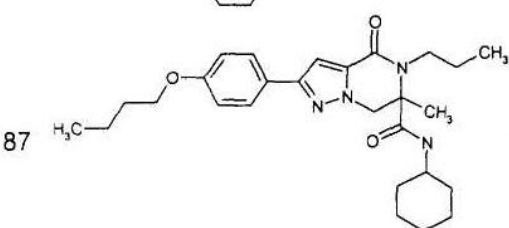
496,6554

LC MS, m/z 497 (M+1) ¹H NMR 1.00-1.34 (m, 8H, Alk), 1.50-1.95 (m, 16H, Alk), 2.87-3.00 (m, 2H, (H₂O+Alk)), 3.29 (s, 3H, Alk), 3.37-3.66 (m, 4H, Alk), 4.04-4.11 (m, 2H, Alk), 4.15-4.22, 4.82-4.89 (dd, 2H, NCH₂, J=13.6), 6.87-6.98 (m, 2H, Ar), 7.14-7.25 (m, 2H, Ar), 7.47-7.57 (m, 1H, Ar), 7.89-7.95 (m, 1H, NH)



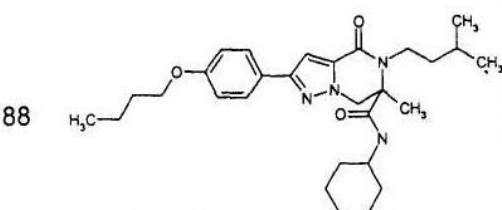
452,60182

453



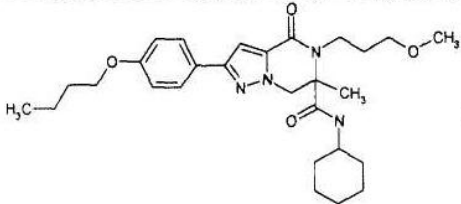
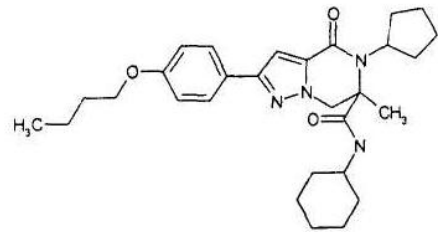
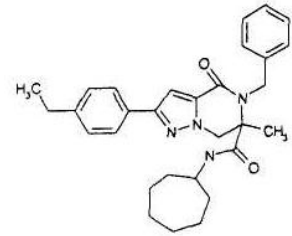
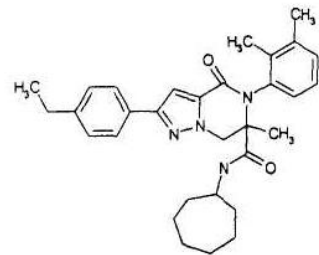
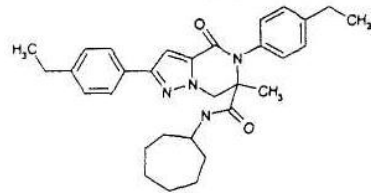
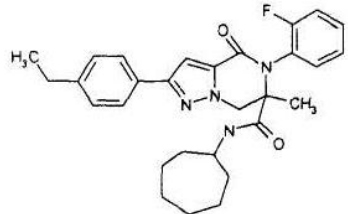
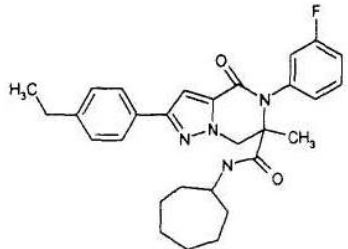
466,62891

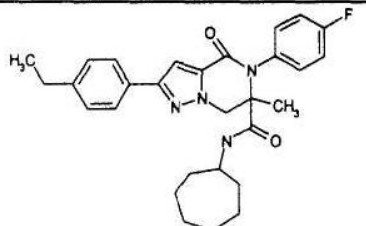
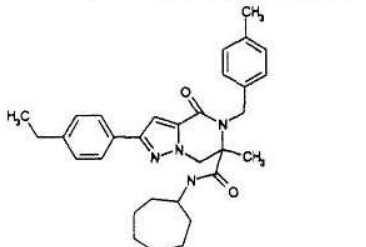
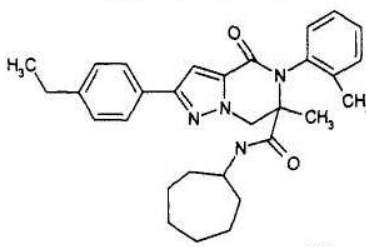
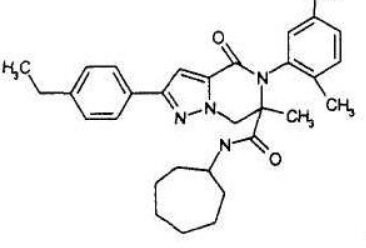
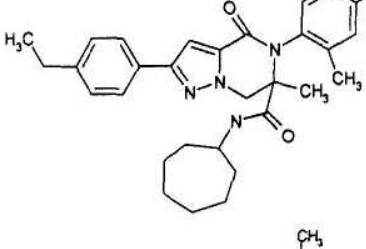
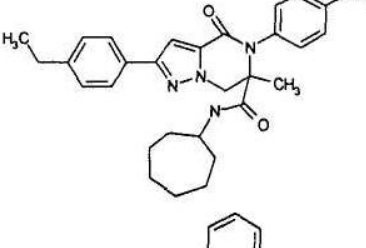
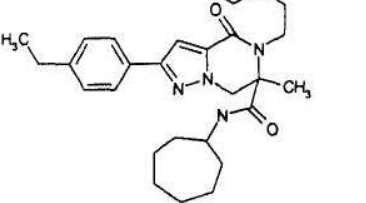
LC MS, m/z 467 (M+1) ¹H NMR 0.89-1.34 (m, 12H, Alk), 1.45-1.81 (m, 16H, Alk), 3.02-3.14 (m, 1H, Alk), 3.43-3.56 (m, 2H, Alk), 3.92-4.00 (m, 2H, Alk), 4.11-4.18, 4.78-4.85 (dd, 2H, NCH₂, J=13.2), 6.81-6.87, 7.64-7.71 (dd, 4H, Ar, J=8.3), 6.91-6.94 (m, 1H, CH(pyrazol)), 7.52-7.59 (m, 1H, NH)

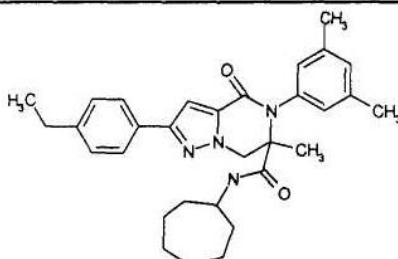
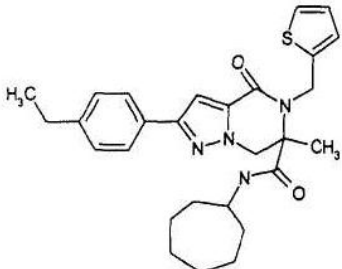
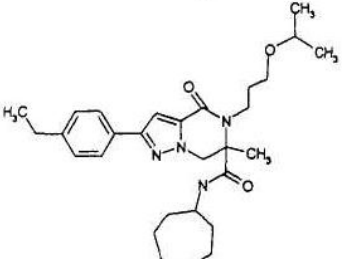
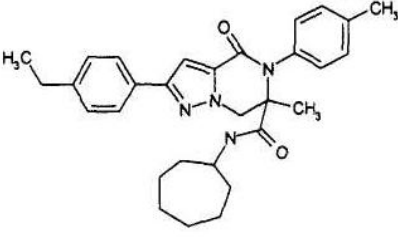
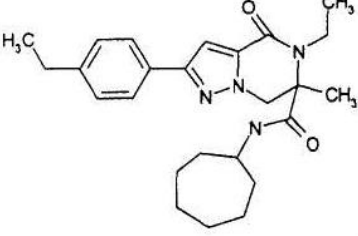
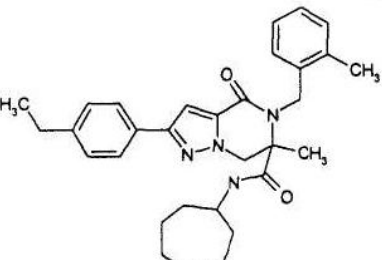


494,68309

495

| | | | |
|----|---|-----------|--|
| 89 |  | 496,6554 | LC MS, m/z: 497 (M+1) 1H NMR 0.93-1.33 (m, 9H, Alk), 1.46-1.89 (m, 16H, Alk), 3.21-3.65 (m, 9H, Alk), 3.92-3.99 (m, 2H, Alk), 4.13-4.20, 4.79-4.86 (dd, 2H, NCH ₂ , J=13.8), 6.81-6.88, 7.64-7.70 (dd, 4H, Ar, J=8.9), 6.93 (s, 1H, CH(pyrazol)), 7.52-7.59 (m, 1H, NH) |
| 90 |  | 492,66715 | LC MS, m/z: 493 (M+1) 1H NMR 0.95-2.00 (m, 31H, Alk), 2.04-2.17 (m, 1H, Alk), 2.28-2.40 (m, 1H, Alk), 2.25-2.36 (m, 1H, Alk), 3.56-3.67 (m, 1H, NHCH), 3.93-4.00 (m, 2H, OCH ₂), 4.09-4.17, 4.60-4.68 (dd, 2H, NCH ₂ , J=13.9), 6.82-6.89, 7.63-7.71 (dd, 4H, Ar, J=8.7), 6.92-6.96 (m, 1H, CH(pyrazol)), 7.97-8.05 (m, 1H, NH) |
| 91 |  | 484,64702 | 485 |
| 92 |  | 498,67411 | LC MS, m/z: 499 (M+1). 1H NMR. 1.15-1.83 (m, 22H, Alk), 2.10 (s, 3H, MePh), 2.34 (s, 3H, MePh), 2.62-2.71 (m, 2H, CH ₂ (p-EtPh)), 3.64-3.75 (m, 1H, NHCH), 4.42-4.50, 5.02-5.09 (dd, 2H, NCH ₂ , J=13.6), 7.00-7.14 (m, 4H, Ar), 7.15-7.21, 7.67-7.75 (dd, 4H, Ar, J=7.8), 7.30-7.35 (m, 1H, NH) |
| 93 |  | 498,67411 | 499 |
| 94 |  | 488,61036 | 489 |
| 95 |  | 488,61036 | 489 |

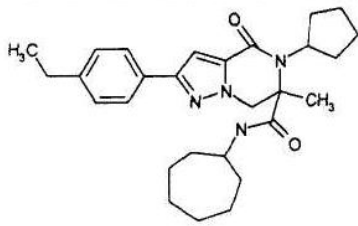
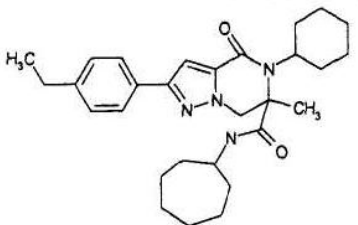
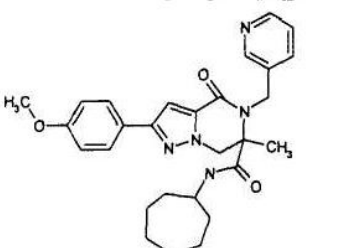
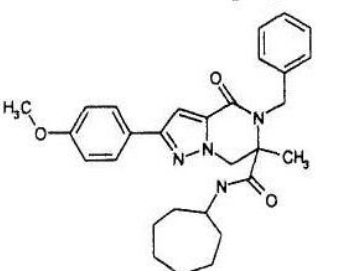
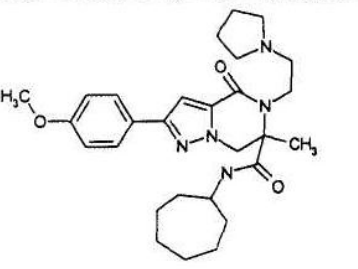
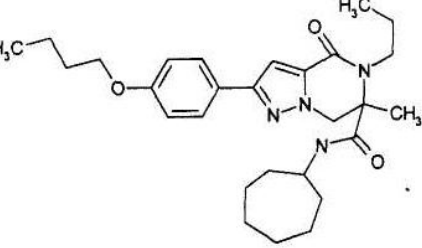
| | | | |
|-----|---|-----------|---|
| 96 |  | 488,61036 | LC MS, m/z: 489 (M+1). ¹ H NMR: 1.10-1.79 (m, 20H, Alk), 2.60-2.70 (q, 2H, OCH ₂ , J=7.9), 3.61-3.72 (m, 1H, NHCH), 4.43-4.51, 5.00-5.08 (dd, 2H, NCH ₂ , J=13.9), 7.00-7.15 (m, 3H, Ar), 7.15-7.21, 7.67-7.73 (dd, 4H, Ar, J=7.4), 7.36-7.46 (m, 2H, Ar), 7.74-7.80 (m, 1H, NH) |
| 97 |  | 498,67411 | 499 |
| 98 |  | 484,64702 | 485 |
| 99 |  | 498,67411 | 499 |
| 100 |  | 498,67411 | 499 |
| 101 |  | 498,67411 | 499 |
| 102 |  | 498,67411 | 499 |

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|-----|---|-----------|---|
| 103 |  | 498,67411 | 499 |
| 104 |  | 490,67278 | 491 |
| 105 |  | 494,68309 | LC MS, m/z: 495 (M+1) 1H NMR 1.00-1.89 (m, 30H, Alk), 2.60-2.69 (q, 2H, OCH2, J=6.7), 3.18-3.76 (m, 8H, Alk), 4.13-4.20, 4.80-4.89 (dd, 2H, NCH2, J=12.4), 6.97 (s, 1H, CH(pyrazol)), 7.13-7.19, 7.64-7.70 (dd, 4H, Ar, J=7.6), 7.53-7.60 (m, 1H, NH) |
| 106 |  | 484,64702 | 485 |
| 107 |  | 422,57533 | 423 |
| 108 |  | 498,67411 | 499 |

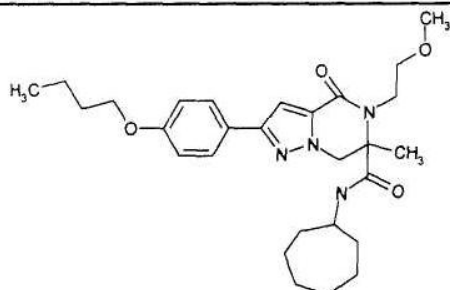
213

84447

214

| | | | |
|-----|---|-----------|-----|
| 109 |  | 462,64066 | 463 |
| 110 |  | 476,66775 | 477 |
| 111 |  | 487,60691 | 488 |
| 112 |  | 486,61933 | 487 |
| 113 |  | 493,65473 | 494 |
| 114 |  | 480,656 | 481 |

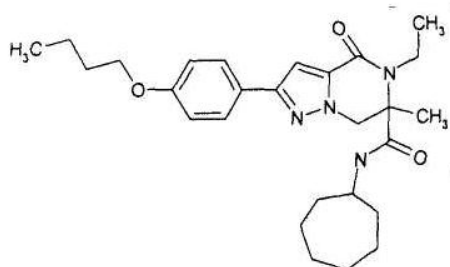
115



496,6554

LC MS, m/z: 497 (M+1). ¹H NMR: 0.96-1.82 (m, 20H, Alk), 3.33 (s, 3H, OMe), 3.48-3.70 (m, 5H, Alk), 3.92-4.00 (m, 2H, OCH₂), 4.10-4.18, 4.81-4.89 (dd, 2H, NCH₂, J=13.3), 6.81-6.88, 7.63-7.70 (dd, 4H, Ar, J=7.8), 6.92 (s, 1H, CH(pyrazol)), 7.51-7.57 (m, 1H, NH)

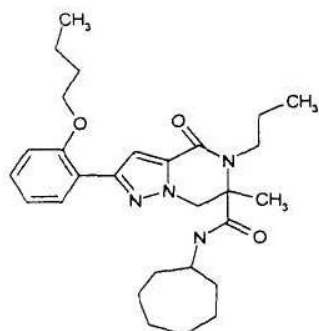
116



466,62891

LC MS, m/z: 467 (M+1). ¹H NMR: 0.90-1.82 (m, 30H, Alk), 3.20-3.32 (m, 1H, Alk), 3.53-3.66 (m, 1H, Alk), 3.66-3.75 (m, 1H, CHNH), 3.92-4.00 (m, 2H, OCH₂), 4.10-4.85, 4.77-4.85 (dd, 2H, NCH₂, J=13.9), 6.82-6.89 (d, 2H, Ar, J=8.2), 6.94 (s, 1H, CH(pyrazol)), 7.62-7.73 (m, 3H, (Ar)NH)

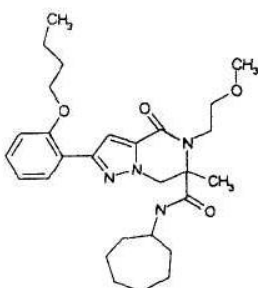
117



480,656

LC MS, m/z: 481 (M+1). ¹H NMR: 0.90-0.98 (m, 3H, CH₃(Alk)), 1.00-1.06 (m, 3H, CH₃(Alk)), 1.33-1.73 (m, 24H, Alk), 1.83-1.93 (m, 2H, Alk), 3.03-3.13 (m, 1H, Alk), 3.44-3.55 (m, 1H, Alk), 3.65-3.75 (m, 1H, NHCH), 4.04-4.11 (m, 2H, OCH₂), 4.13-4.19, 4.81-4.87 (dd, 2H, NCH₂, J=13.3), 6.87-6.96 (m, 2H, Ar), 7.14-7.24 (m, 2H, Ar), 7.52-7.57 (m, 1H, NH), 7.89-7.94 (d, 1H, Ar, J=7.5)

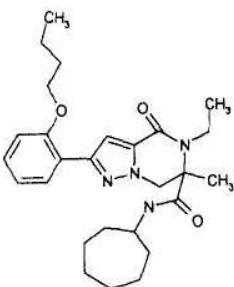
118



496,6554

LC MS, m/z: 497 (M+1). ¹H NMR: 1.00-1.08 (m, 3H, CH₃(Alk)), 1.30-1.94 (m, 23H, Alk), 3.34 (s, 3H, OMe), 3.50-3.60 (m, 6H, Alk), 4.04-4.11 (m, 2H, OCH₂), 4.13-4.20, 4.84-4.90 (dd, 2H, NCH₂, J=12.6), 6.87-6.97 (m, 2H, Ar), 7.14-7.24 (m, 2H, Ar), 7.50-7.56 (m, 1H, NH), 7.89-7.95 (m, 1H, Ar)

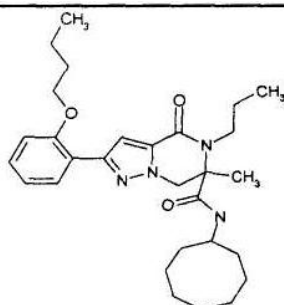
119



466,62891

467

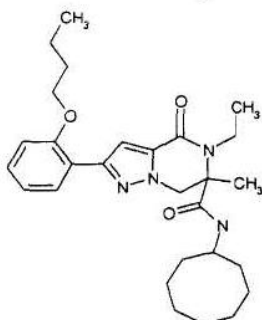
120



494,68309

LC MS, m/z: 495 (M+1). ¹H NMR: 0.90-0.98 (m, 3H, CH₃(Alk)), 1.00-1.08 (m, 3H, Alk), 1.37-1.73 (m, 28H, Alk), 1.84-1.94 (m, 2H, Alk), 3.03-3.14 (m, 1H, Alk), 3.46-3.57 (m, 2H, Alk), 3.72-3.82 (m, 1H, NHCH), 4.03-4.11 (m, 2H, OCH₂), 4.13-4.21, 4.80-4.89 (dd, 2H, NCH₂, J=12.2), 6.87-6.98 (m, 2H, Ar), 7.14-7.24 (m, 2H, Ar), 7.50-7.58 (m, 1H, NH), 7.89-7.95 (d, 1H, Ar, J=8.1)

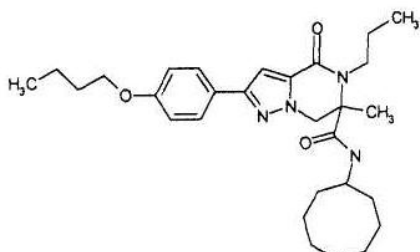
121



480,656

LC MS, m/z: 481 (M+1). ¹H NMR: 1.00-1.06 (m, 3H, CH₃(Alk)), 1.20-1.27 (m, 2H, Alk), 1.40-1.69 (m, 21H, Alk), 1.83-1.93 (m, 2H, Alk), 3.22-3.32 (m, 1H, Alk), 3.56-3.65 (m, 1H, Alk), 3.73-3.82 (m, 1H, NHCH), 4.04-4.11 (m, 2H, OCH₂), 4.14-4.21, 4.80-4.87 (dd, 2H, NCH₂, J=13.1), 6.87-6.97 (m, 2H, Ar), 7.15-7.24 (m, 2H, Ar), 7.57-7.61 (m, 1H, NH), 7.90-7.94 (m, 1H, Ar)

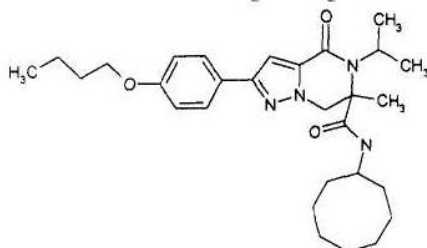
122



494,68309

LC MS, m/z: 495 (M+1). ¹H NMR: 0.88-1.04 (m, 6H, Alk), 1.37-1.81 (m, 26H, Alk), 3.00-3.14 (m, 1H, Alk), 3.45-3.56 (m, 1H, Alk), 3.71-3.81 (m, 1H, CHNH), 3.92-4.00 (m, 2H, OCH₂), 4.10-4.18, 4.79-4.87 (dd, 2H, NCH₂, J=13.8), 6.80-6.87, 7.64-7.70 (dd, 4H, Ar, J=7.5), 6.93 (s, 1H, CH(pyrazol)), 7.52-7.59 (m, 1H, NH)

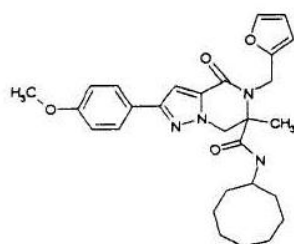
123



494,68309

LC MS, m/z: 495 (M+1). ¹H NMR: 0.95-1.04 (m, 3H, Alk), 1.34-1.82 (m, 30H, Alk), 3.17-3.28 (m, 1H, Alk), 3.84-3.93 (m, 1H, NHCH), 3.94-4.00 (m, 2H, OCH₂), 4.05-4.13, 4.65-4.72 (dd, 2H, NCH₂, J=12.5), 6.083-6.089, 7.64-7.71 (dd, 4H, Ar, J=9.6), 6.94 (s, 1H, CH(pyrazol)), 8.06-8.14 (m, 1H, NH)

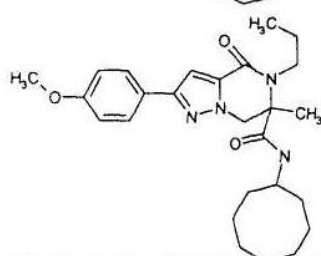
124



490,60758

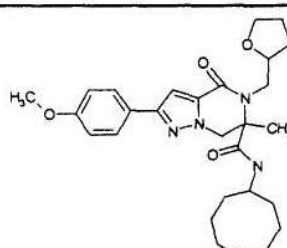
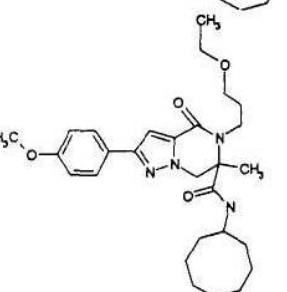
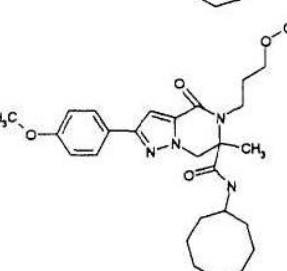
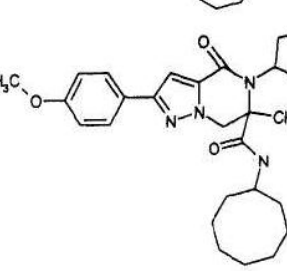
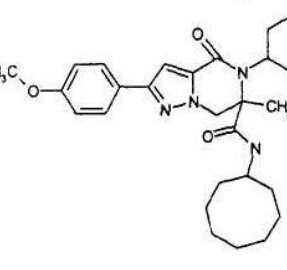
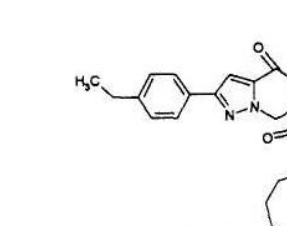
491

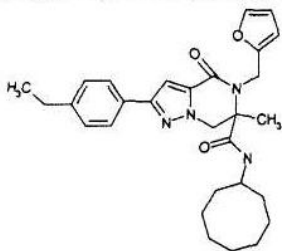
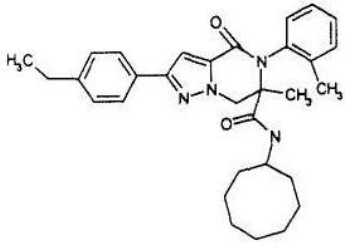
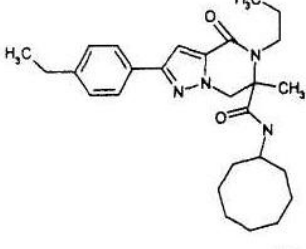
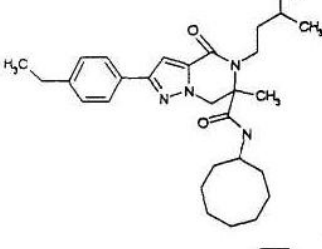
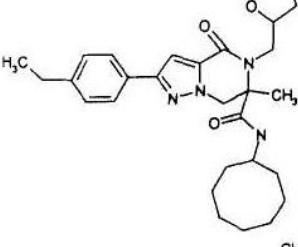
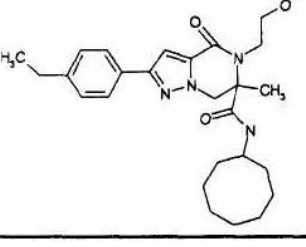
125

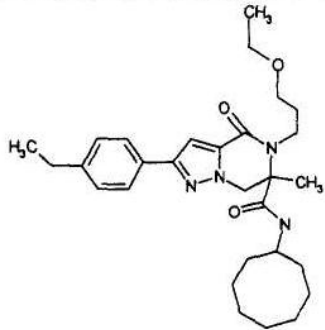
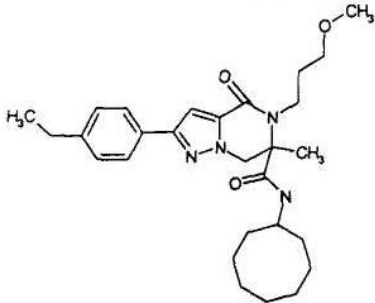
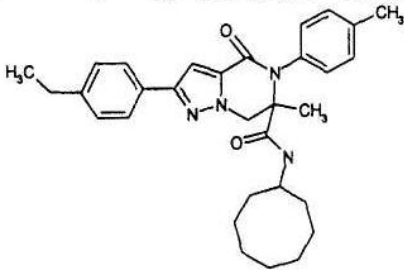
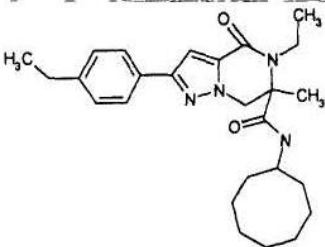
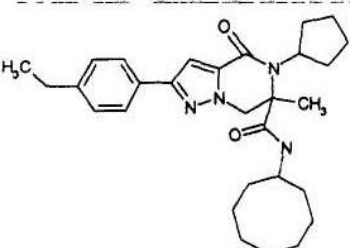


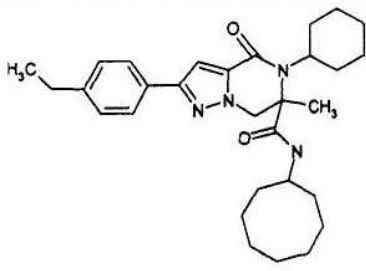
452,60182

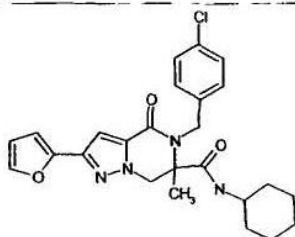
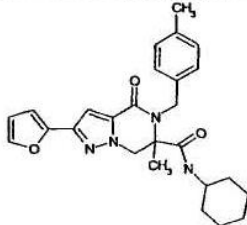
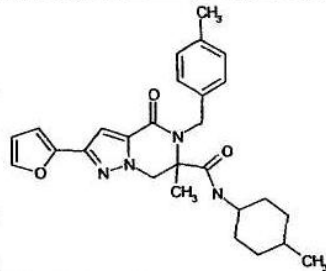
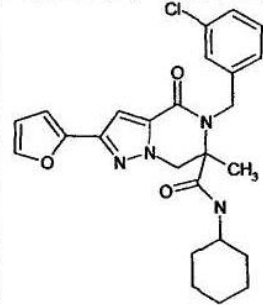
453

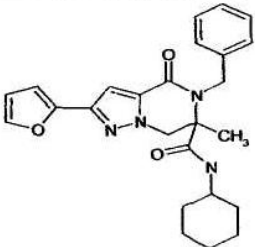
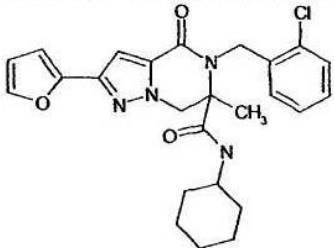
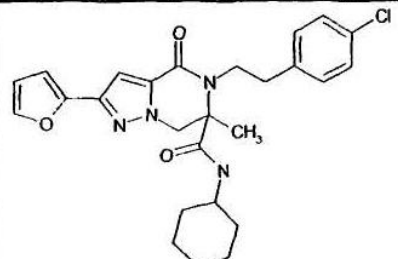
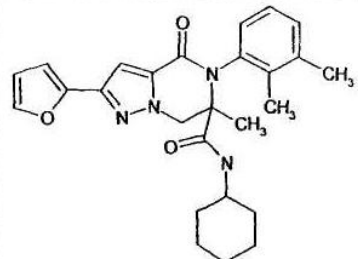
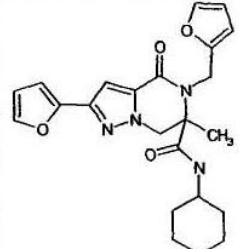
| | | | |
|-----|---|-----------|-----|
| 126 |  | 494,63946 | 495 |
| 127 |  | 496,6554 | 497 |
| 128 |  | 482,62831 | 483 |
| 129 |  | 478,64006 | 479 |
| 130 |  | 492,66715 | 493 |
| 131 |  | 498,67411 | 499 |

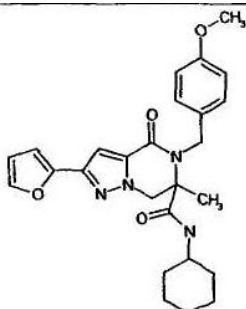
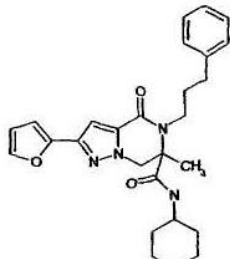
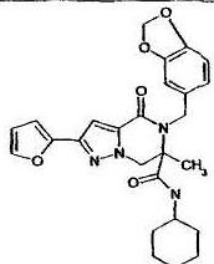
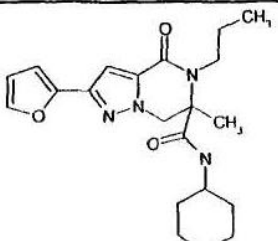
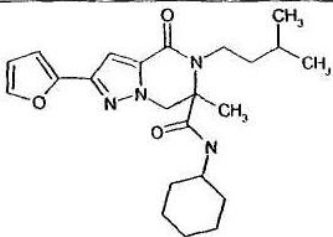
| | | | |
|-----|---|-----------|-----|
| 132 |  | 488,63527 | 489 |
| 133 |  | 498,67411 | 499 |
| 134 |  | 450,62951 | 451 |
| 135 |  | 478,68369 | 479 |
| 136 |  | 492,66715 | 493 |
| 137 |  | 466,62891 | 467 |

| | | | |
|-----|---|-----------|--|
| 138 |  | 494,68309 | 495 |
| 139 |  | 480,656 | 481 |
| 140 |  | 498,67411 | LC MS, m/z. 499 (M+1). ¹ H NMR: 1.22-1.68 (m, 22H, Alk), 2.39 (s, 3H, CH ₃ (MePh)), 2.6-2.7 (m, 2H, CH ₂ (EtPh)), 3.69-3.80 (m, 1H, NHCH), 4.38-4.46, 5.00-5.07 (dd, 2H, NCH ₂ , J=13.1), 7.01 (s, 1H, CH(pyrazol)), 7.13-7.27 (m, 6H, Ar), 7.62-7.79 (m, 3H, NH, Ar) |
| 141 |  | 436,60242 | LC MS, m/z: 437 (M+1). ¹ H NMR: 1.15-1.68 (m, 30H, Alk), 2.59-2.69 (m, 2H, CH ₂ (EtPh)), 2.87-2.98 (m, 4H, (H ₂ O+Alk)), 3.20-3.30 (m, 1H, Alk), 3.55-3.66 (m, 1H, Alk), 3.73-3.82 (m, 1H, NHCH), 4.12-4.21, 4.79-4.87 (dd, 2H, NCH ₂ , J=13.5), 6.98 (s, 1H, pyrazol), 7.13-7.22, 7.66-7.71 (dd, 4H, Ar, J=8.3), 7.6-7.65 (m, 1H, NH) |
| 142 |  | 476,66775 | 477 |

| | | | |
|-----|---|-----------|-----|
| 143 |  | 490,69484 | 491 |
|-----|---|-----------|-----|

| Таблица 1.05(4) | | | |
|-----------------|---|-----------|--|
| № п.п. | Формула | Мол.масса | Мас -спектр, m/z (M+1), ПМР спектр |
| 1 |  | 466,9719 | 467 |
| 2 |  | 446,554 | 447 |
| 3 |  | 460,5811 | 461 |
| 4 |  | 466,9719 | LC MS, m/z: 467 (M+1). 1H NMR: 1.00-1.36 (m, 6H, Alk), 1.50-1.77 (m, 9H, Alk), 3.42-3.54 (br s, 1H, NHCH), 4.15-4.22, 5.23-5.33 (dd, 2H, CH2N, J=13.9), 4.25-4.33, 4.95-5.02 (dd, 2H, CH2Ph, J=16.5), 6.46 (s, 1H, CH(pyrazol)), 6.67-6.71 (m, 1H, CH(furan)), 6.94 (s, 1H, CH(furan)), 7.17-7.31 (m, 4H, 4CH(ClPh)), 7.35 (s, 1H, CH(ClPh)), 7.50 (s, 1H, CH(furan)), 7.52-7.57 (m, 1H, NH) |

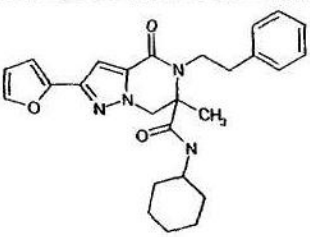
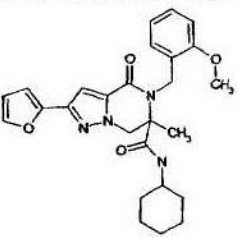
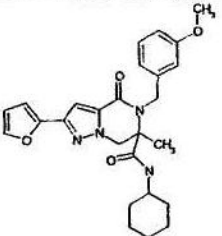
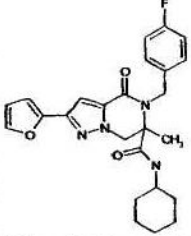
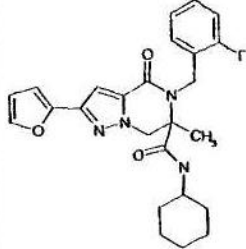
| Таблица 1.05(4) | | | |
|-----------------|---|-----------|---|
| № п.п. | Формула | Мол.масса | Мас -спектр, m/z (M+1), ПМР спектр |
| 5 |  | 432,5269 | 433 |
| 6 |  | 466,9719 | 467 |
| 7 |  | 480,999 | 481 |
| 8 |  | 446,554 | LC MS, m/z: 447 (M+1). ¹ H NMR: 0.91-1.35 (m, 11H, Alk), 1.55-1.75 (m, 10H, Alk), 2.65 (q, 2H, CH ₂ (p-EtPh), J=7.4), 3.05-3.16 (m, 1H, CONHCH), 3.44-3.58 (m, 2H, Alk), 4.13-4.20, 4.81-4.86 (dd, 2H, CH ₂ -cycle, J=12.8), 6.98 (s, 1H, CH(pyrazol)), 7.14-7.19, 7.65-7.68 (dd, 4H, 4CH(p-EtP... |
| 9 |  | 422,4881 | 422 |

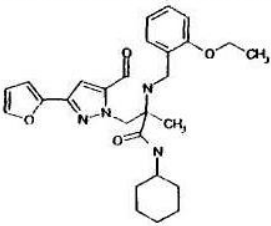
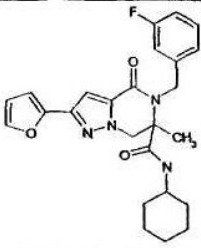
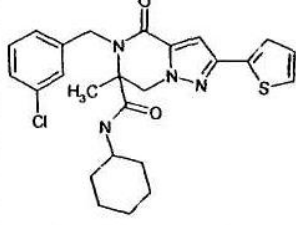
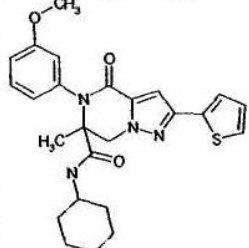
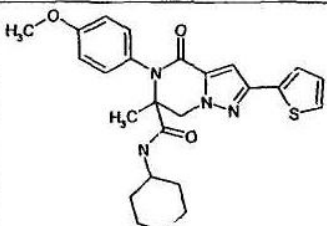
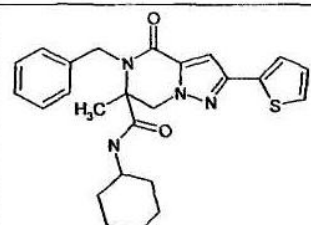
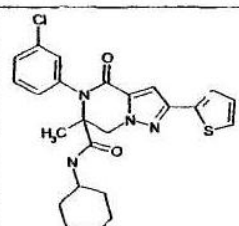
| | | | |
|----|---|----------|---|
| 10 |  | 462,5534 | LC MS, m/z: 463 (M+1). ¹ H NMR: 1.71-1.94 (m, 15H, Alk), 3.39-3.50 (m, 1H, NHCH), 3.76 (s, 3H, OMe), 4.09-4.15, 5.18-5.26 (dd, 2H, NCH ₂ , J=14.2), 4.15-4.21, 4.88-4.96 (dd, 2H, CH ₂ Ph, J=16.9), 6.44 (s, 1H, CH(pyrazol)), 6.45-6.68 (m, 1H, CH(furan)), 6.76-6.82, 7.2-7.25 (dd, 4H, 4CH(p-PhOMe)), 6.90 (s, 1H, CH(furan)), 7.32-7.36 (m, 1H, NH), 7.48 (s, 1H, CH(furan)) |
| 11 |  | 460,5811 | 461 |
| 12 |  | 476,5369 | 477 |
| 13 |  | 384,4823 | LC MS, m/z: 384 (M+1). ¹ H NMR: 0.89-1.76 (m, 21H, Alk), 3.04-3.15 (m, 1H, Alk), 3.45-3.57 (m, 2H, Alk), 4.12-4.2, 4.79-4.86 (dd, 2H, NCH ₂ , J=13.8), 6.44 (br s, 1H, CH(pyrazol)), 6.62-6.66 (m, 1H, CH(furan)), 6.85 (s, 1H, CH(furan)), 7.47 (s, 1H, CH(furan)), 7.49-7.56 (m, 1H, NH), |
| 14 |  | 412,5365 | LC MS, m/z: 413 (M+1) ¹ H NMR: 0.92-1.77 (m, 28H, Alk), 3.08-3.2 (m, 1H, Alk), 3.47-3.63 (m, 2H, Alk), 4.11-4.18, 4.8-4.87 (dd, 2H, NCH ₂ , J=14.2), 6.44 (s, 1H, CH(pyrazol)), 6.62-6.67 (m, 1H, CH(furan)), 6.84 (s, 1H, CH(furan)), 7.47 (s, 1H, CH(furan)), 7.5-7.56 (m, 1H, NH) |

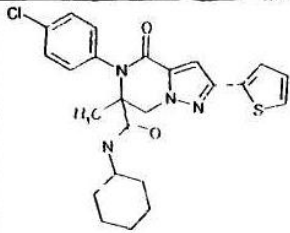
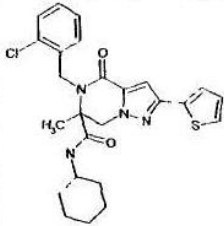
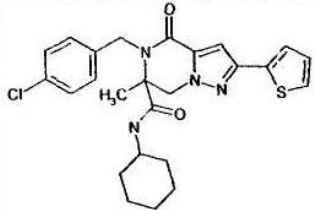
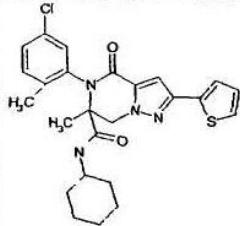
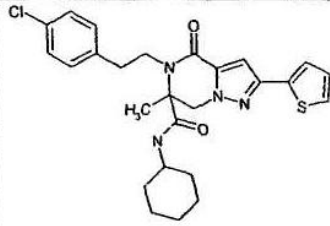
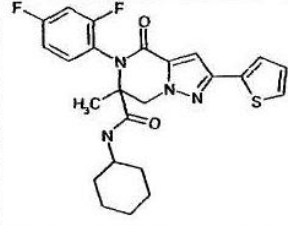
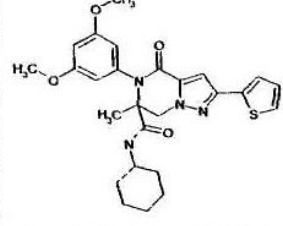
231

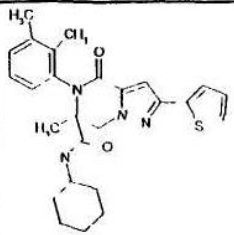
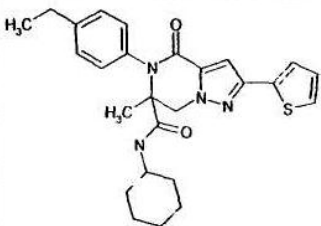
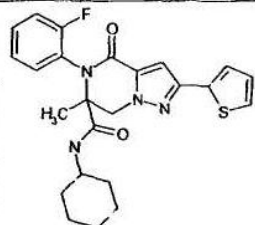
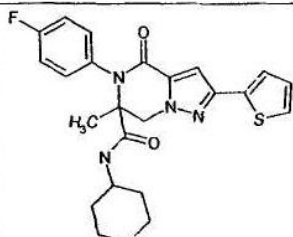
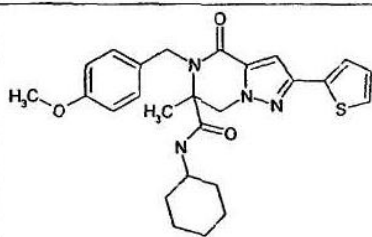
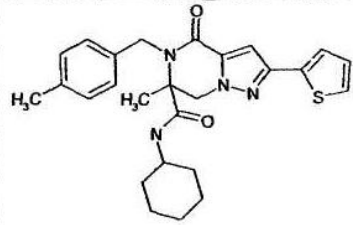
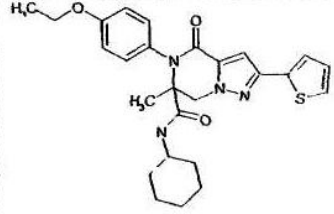
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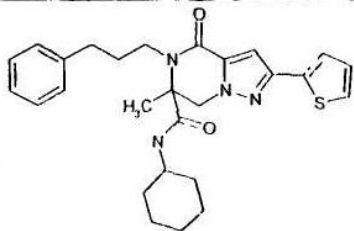
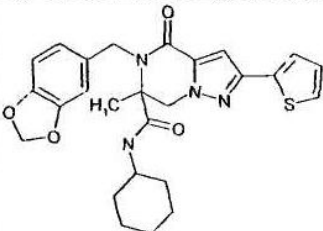
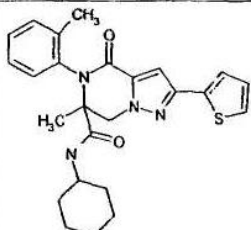
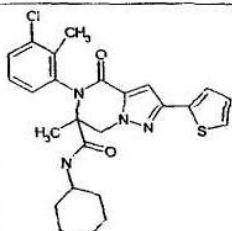
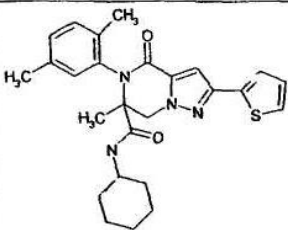
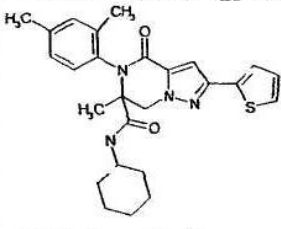
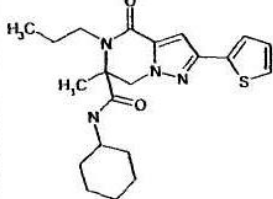
232

| | | | |
|----|---|----------|-----|
| 15 |  | 446,554 | 447 |
| 16 |  | 462,5534 | 463 |
| 17 |  | 462,5534 | 463 |
| 18 |  | 450,5173 | 451 |
| 19 |  | 450,5173 | 451 |

| | | | |
|----|---|----------|-----|
| 20 |  | 476,5805 | 477 |
| 21 |  | 450,5173 | 451 |
| 22 |  | 483,0365 | 484 |
| 23 |  | 464,5909 | 465 |
| 24 |  | 464,5909 | 465 |
| 25 |  | 448,5915 | 449 |
| 26 |  | 469,0095 | 470 |

| | | | |
|----|---|----------|-----|
| 27 |  | 469,0095 | 470 |
| 28 |  | 483,0365 | 484 |
| 29 |  | 483,0365 | 484 |
| 30 |  | 483,0365 | 484 |
| 31 |  | 497,0636 | 498 |
| 32 |  | 470,5453 | 471 |
| 33 |  | 494,6174 | 495 |

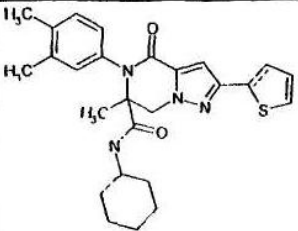
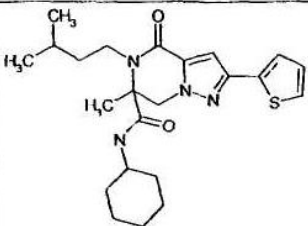
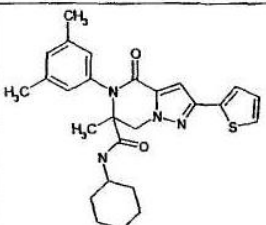
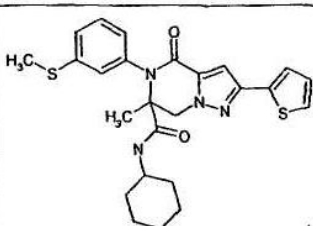
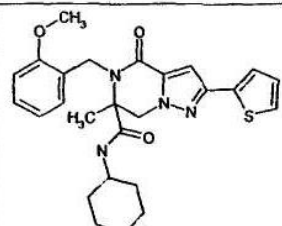
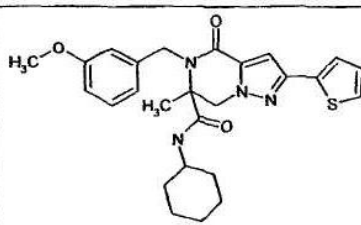
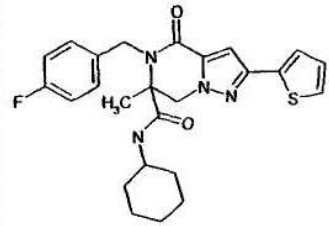
| | | | |
|----|---|----------|-----|
| 34 |  | 462,6186 | 463 |
| 35 |  | 462,6186 | 463 |
| 36 |  | 452,5549 | 453 |
| 37 |  | 452,5549 | 453 |
| 38 |  | 478,618 | 479 |
| 39 |  | 462,6186 | 463 |
| 40 |  | 478,618 | 479 |

| | | | |
|----|---|----------|-----|
| 41 |  | 476,6457 | 477 |
| 42 |  | 492,6015 | 493 |
| 43 |  | 448,5915 | 449 |
| 44 |  | 483,0365 | 484 |
| 45 |  | 462,6186 | 463 |
| 46 |  | 462,6186 | 463 |
| 47 |  | 400,5469 | 401 |

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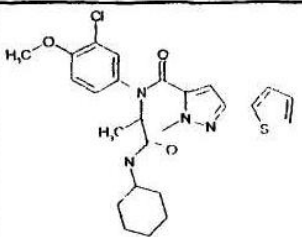
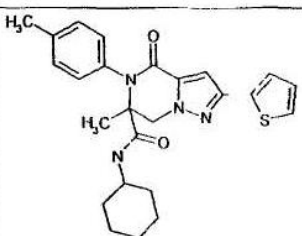
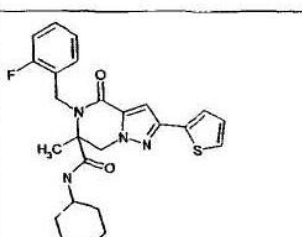
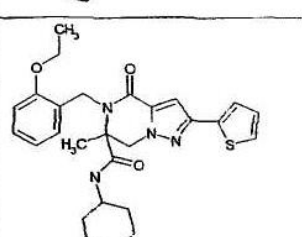
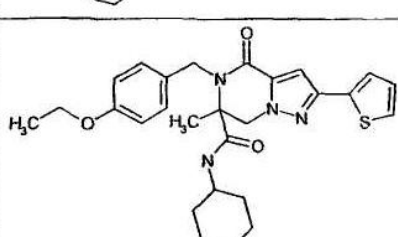
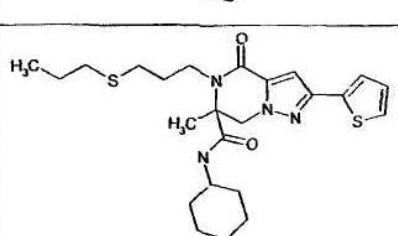
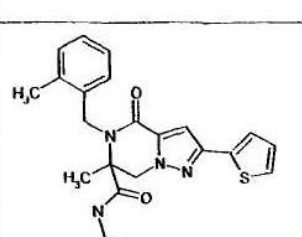
242

| | | | |
|----|---|----------|-----|
| 48 |  | 462,6186 | 463 |
| 49 |  | 428,6011 | 429 |
| 50 |  | 462,6186 | 463 |
| 51 |  | 480,6555 | 481 |
| 52 |  | 478,618 | 479 |
| 53 |  | 478,618 | 479 |
| 54 |  | 466,5819 | 467 |

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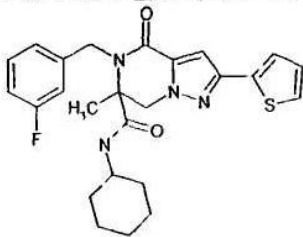
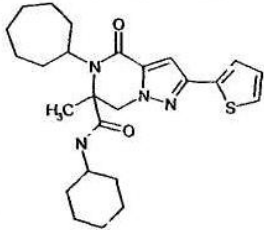
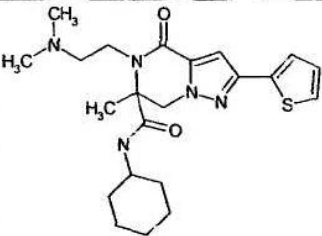
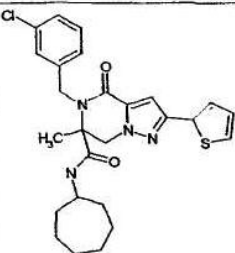
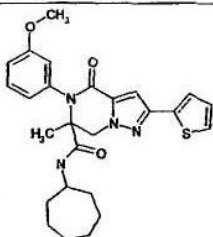
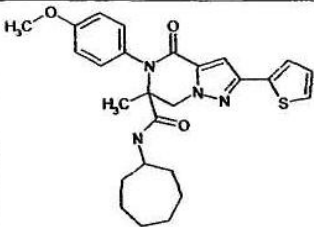
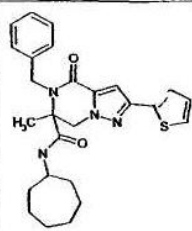
244

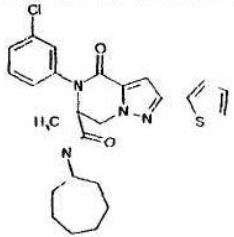
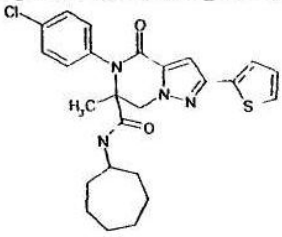
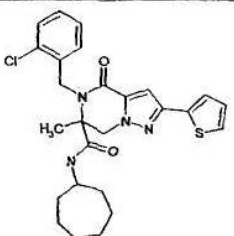
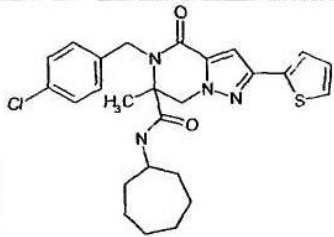
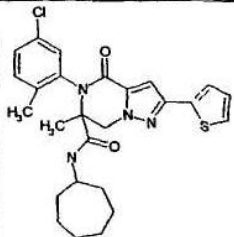
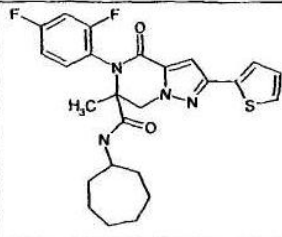
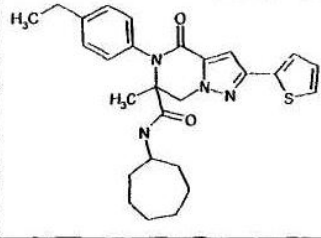
| | | | |
|----|---|----------|-----|
| 55 |  | 499,0359 | 500 |
| 56 |  | 448,5915 | 449 |
| 57 |  | 466,5819 | 467 |
| 58 |  | 492,6451 | 493 |
| 59 |  | 492,6451 | 493 |
| 60 |  | 474,6922 | 475 |
| 61 |  | 462,6186 | 463 |

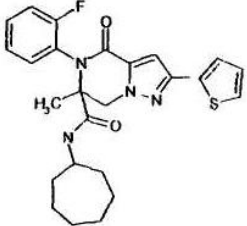
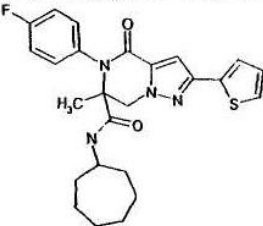
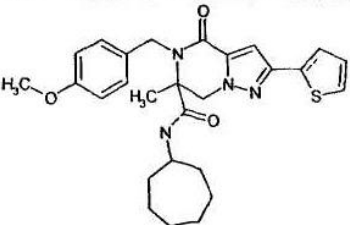
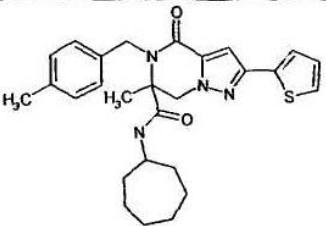
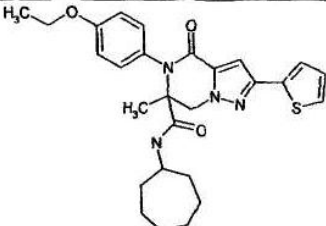
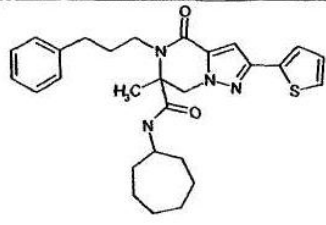
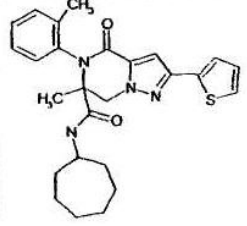
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| | | | |
|----|---|----------|-----|
| 62 |  | 466,5819 | 467 |
| 63 |  | 454,6393 | 455 |
| 64 |  | 429,5887 | 430 |
| 65 |  | 497,0636 | 498 |
| 66 |  | 478,618 | 479 |
| 67 |  | 478,618 | 479 |
| 68 |  | 462,6186 | 463 |

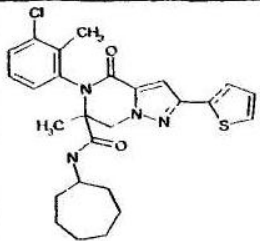
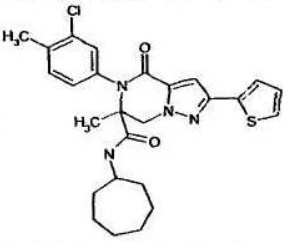
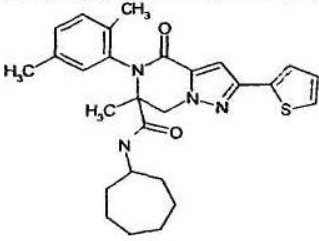
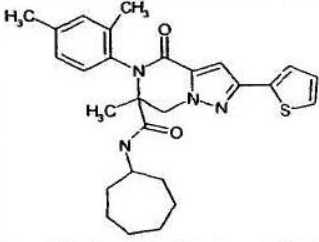
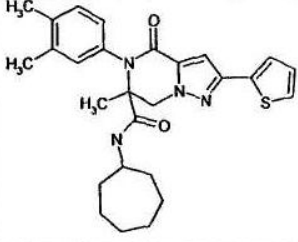
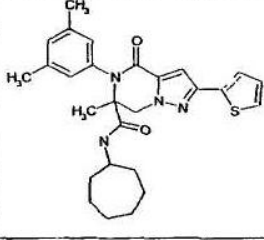
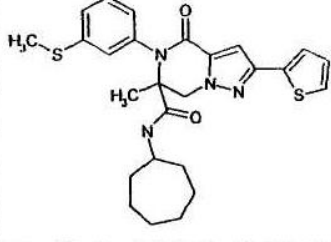
| | | | |
|----|---|----------|-----|
| 69 |  | 483,0365 | 484 |
| 70 |  | 483,0365 | 484 |
| 71 |  | 497,0636 | 484 |
| 72 |  | 497,0636 | 484 |
| 73 |  | 497,0636 | 498 |
| 74 |  | 484,5724 | 485 |
| 75 |  | 476,6457 | 477 |

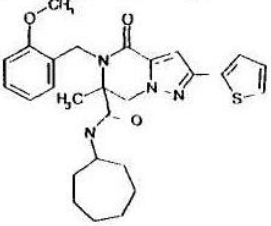
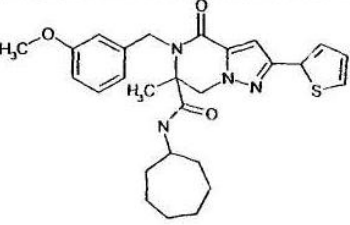
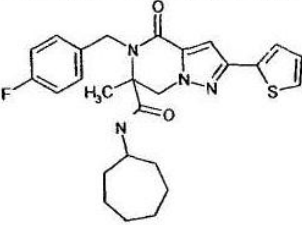
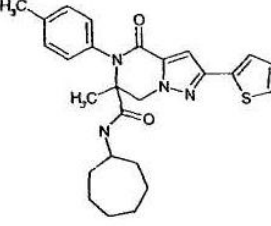
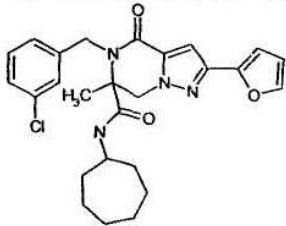
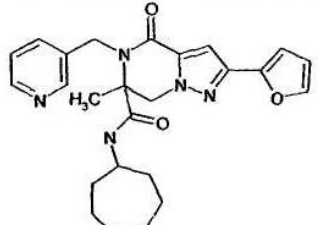
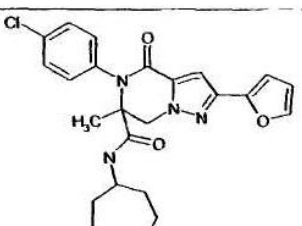
| | | | |
|----|---|----------|-----|
| 76 |  | 466,5819 | 467 |
| 77 |  | 466,5819 | 467 |
| 78 |  | 492,6451 | 493 |
| 79 |  | 476,6457 | 477 |
| 80 |  | 492,6451 | 493 |
| 81 |  | 490,6728 | 491 |
| 82 |  | 462,6186 | 463 |

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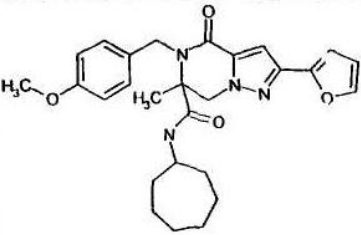
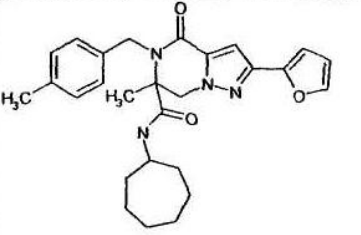
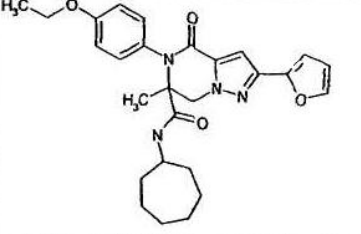
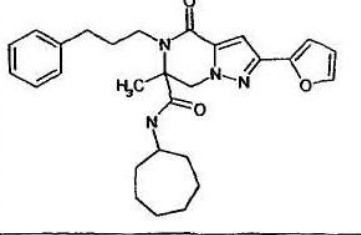
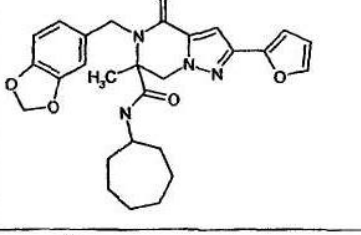
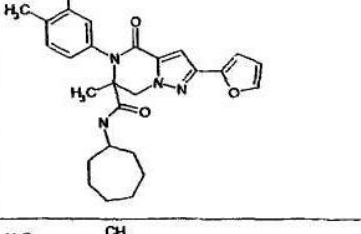
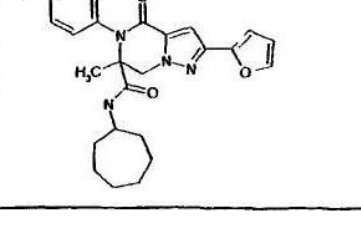
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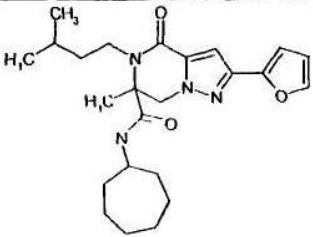
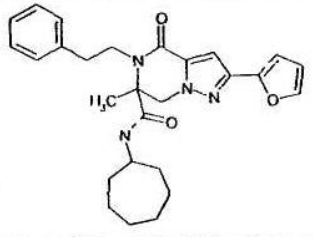
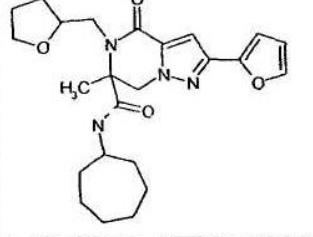
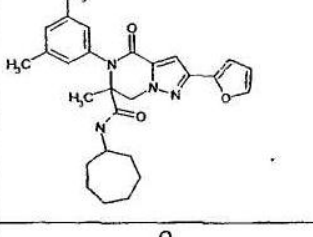
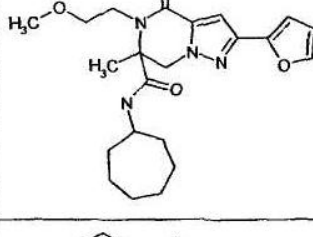
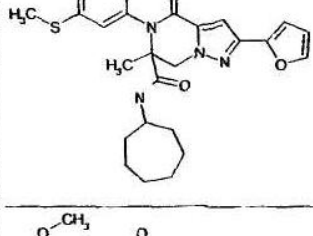
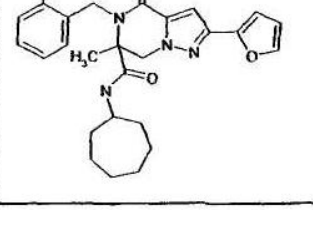
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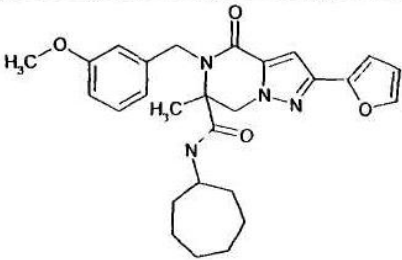
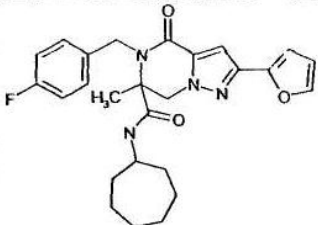
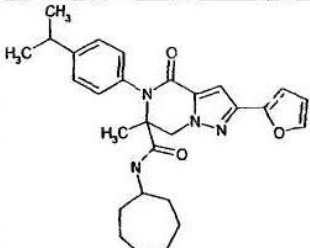
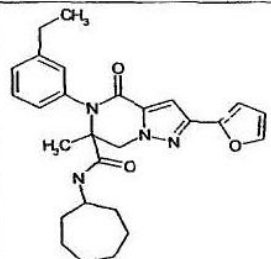
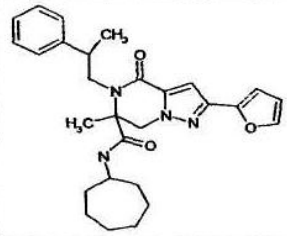
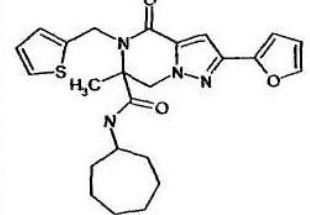
| | | | |
|----|---|----------|-----|
| 83 |  | 497,0636 | 498 |
| 84 |  | 497,0636 | 498 |
| 85 |  | 476,6457 | 477 |
| 86 |  | 476,6457 | 477 |
| 87 |  | 476,6457 | 477 |
| 88 |  | 476,6457 | 477 |
| 89 |  | 494,6826 | 495 |

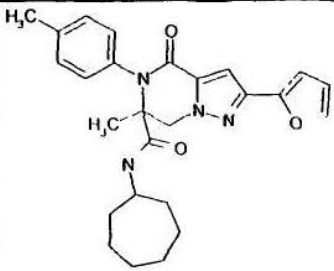
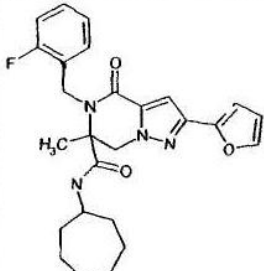
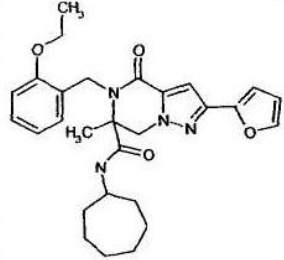
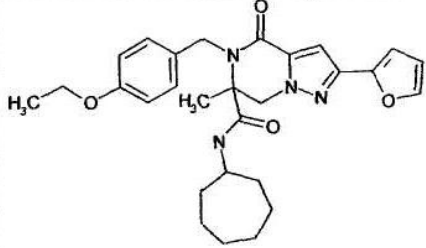
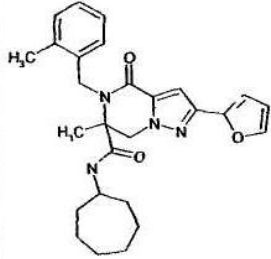
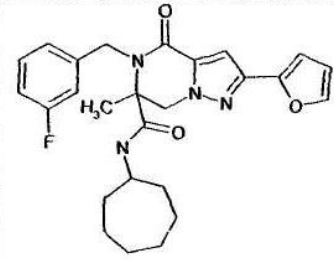
| | | | |
|----|---|----------|---|
| 90 |  | 492,6451 | 493 |
| 91 |  | 492,6451 | 493 |
| 92 |  | 480,609 | 481 |
| 93 |  | 462,6186 | 463 |
| 94 |  | 480,999 | 481 |
| 95 |  | 447,5416 | 448 |
| 96 |  | 466,9719 | LC MS, m/z: 467 (M+1). ¹ H NMR: 1.23-1.78 (m, 18H, Alk), 3.63-3.72 (m, 1H, NHCH), 4.45-4.51, 5.01-5.08 (dd, 2H, CH ₂ N, J=14.4), 6.45-6.48 (m, 1H, CH(pyrazol)), 6.66-6.70 (m, 1H, CH(furan)), 6.91 (s, 1H, CH(furan)), 7.36-7.44 (m, 4H, 4CH(ClPh)), 7.5 (s, 1H, CH(furan)), 7.74-7.79 (m, 1H, NH) |

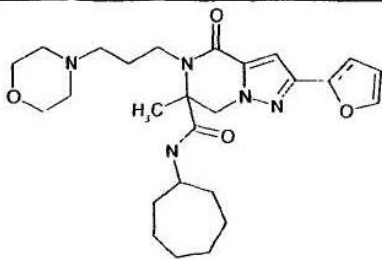
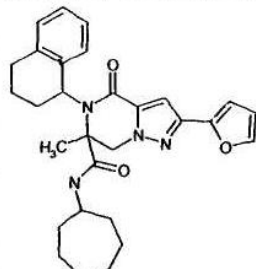
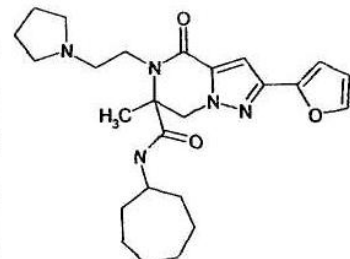
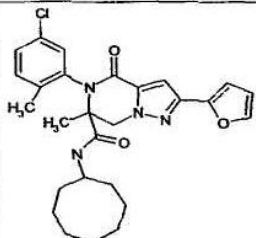
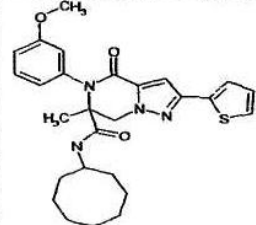
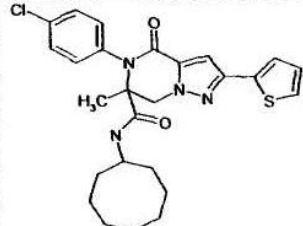
| | | | |
|-----|--|----------|--|
| 97 | | 480,999 | LC MS, m/z: 481 (M+1). ¹ H NMR: 1.28-1.77 (m, 16H, Alk); 3.62-3.72 (m, 1H, CO-NH-CH); 4.19-4.27, 5.22-5.30 (dd, 2H, N-CH ₂ -Ph, I = 18); 4.33-4.44, 4.99-5.06 (dd, 2H, CH ₂ (furan), I = 13.2); 6.46 (t, 1H, CH (furan)); 6.69 (d, 1H, CH (furan)); 6.93 (s, 1H, CH (pyrazol)); 7.17-7.26 (m, 2H, 2CH (-o-ClPh)); 7.32-7.396 (m, 2H, 2CH (-o-ClPh)); 7.50 (s, 1H, (furan)); 7.7 (d, 1H, CONH) |
| 98 | | 480,999 | 481 |
| 99 | | 495,0261 | 496 |
| 100 | | 460,5811 | LC MS, m/z: 461 (M+1). ¹ H NMR: 1.22-1.78 (m, 21H, Alk), 2.69 (q, 2H, CH ₂ (p-EtPh)), 3.62-3.74 (m, 1H, NHCH), 4.38-4.46, 4.96-5.04 (dd, 2H, NCH ₂ , J=13.6), 6.45 (s, 1H, CH(pyrazol)), 6.64-6.68 (m, 1H, CH(furan)), 6.19 (s, 1H, CH(furan)), 7.16-7.22, 7.22-7.27 (dd, 4H, 4CH(p-EtPh), J=8.1), 7.48 (s, 1H, CH(furan)), 7.63-7.69 (m, 1H, NH) |
| 101 | | 450,5173 | 451 |
| 102 | | 436,5152 | 437 |

| | | | |
|-----|---|----------|-----|
| 103 |  | 476,5805 | 477 |
| 104 |  | 460,5811 | 461 |
| 105 |  | 476,5805 | 477 |
| 106 |  | 474,6082 | 475 |
| 107 |  | 490,564 | 491 |
| 108 |  | 480,999 | 481 |
| 109 |  | 460,5811 | 461 |

| | | | |
|-----|---|----------|-----|
| 110 |  | 426,5636 | 427 |
| 111 |  | 460,5811 | 461 |
| 112 |  | 440,547 | 441 |
| 113 |  | 460,5811 | 461 |
| 114 |  | 414,5088 | 415 |
| 115 |  | 478,618 | 479 |
| 116 |  | 476,5805 | 477 |

| | | | |
|-----|---|----------|---|
| 117 |  | 476,5805 | LC MS, m/z: 477 (M+1). ¹ H NMR: 1.22-1.72 (m, 15H, Alk); 3.58-3.67 (m, 1H, CO-NH-CH); 3.77 (s, 3H, CH ₃ -O); 4.1-4.17, 5.25-5.32 (dd, 2H, N-CH ₂ -Ph, I = 17.8); 4.21-4.28, 4.92-4.98 (dd, 2H, CH ₂ (oëëë), I = 13.5); 6.46 (t, 1H, CH (furan)); 6.67 (d, 1H, CH (furan)); 6.71 (d, 1H, CH (-m-OMePh)); 6.91 (s, 1H, CH (pyrazol)); 7.14-7.19 (m, 1H, Ar); 7.5 (s, 1H, CO-NH) |
| 118 |  | 464,5444 | 465 |
| 119 |  | 474,6082 | 475 |
| 120 |  | 460,5811 | 461 |
| 121 |  | 474,6082 | 475 |
| 122 |  | 452,5798 | 453 |

| | | | |
|-----|---|----------|---|
| 123 |  | 446,554 | 447 |
| 124 |  | 464,5444 | LC MS, m/z: 465 (M+1). 1H NMR: 1.25-1.75 (m, 15H, Alk), 3.60-3.70 (m, 1H, CONHCH), 4.27 (t, 2H, CH2Ph, J=16.5), 4.96-5.03, 5.21-5.29 (dd, 2H, CH2-cycle, J=14.3), 6.44-6.47 (m, 1H, CH(furan)), 6.66-6.68 (m, 1H, CH(furan)), 6.92 (s, 1H, CH(pyrazol)), 6.99-7.13 (m, 2H, 2CH(o-FPh)), 7.18-7.67 (m, 4H, 2CH(o-FPh)), 1CH(furan), NH) |
| 125 |  | 490,6076 | 491 |
| 126 |  | 490,6076 | LC MS, m/z: 491 (M+1). 1H NMR: 1.19-1.69 (m, 18H, Alk), 3.57-3.67 (m, 1H, CONHCH), 3.99 (q, 2H, CH3CH2O, J=7.1), 4.12-4.20 (m, 2H, CH2Ph), 4.90-4.95, 5.16-5.25 (dd, 2H, CH2-cycle, J=13.5), 6.43-6.46 (m, 1H, CH(furan)), 6.65-6.68 (m, 1H, CH(furan)), 6.75-6.80, 7.20-7.24 (dd, 4H, 4CH(p-OEtPh), J=8.5), 6.91 (s, 1H, CH(pyrazol)), 7.36 (br, s, 1H, CH(furan)), 7.49 (s, 1H, NH) |
| 127 |  | 460,5811 | 461 |
| 128 |  | 464,5444 | 465 |

| | | | |
|-----|---|----------|--|
| 129 |  | 483,6159 | LC MS, m/z: 484 (M+1). ¹ H NMR: 1.34-1.81 (m, 17H, Alk), 2.29-2.41 (m, 6H, Alk), 3.15-3.25 (m, 1H, CONHCH), 3.55-3.71 (m, 6H, Alk), 4.16-4.22, 4.80-4.86 (dd, 2H, CH ₂ -cycle, J=13.8), 6.43-6.47 (m, 1H, CH(furan)), 6.64-6.66 (m, 1H, CH(furan)), 6.82-6.84 (m, 1H, CH(pyrazol)), 7.49-7.51 (m, 1H, CH(furan)), 7.63-7.67 (m, 1H, NH) |
| 130 |  | 486,6193 | 487 |
| 131 |  | 453,5894 | LC MS, m/z: 454 (M+1). ¹ H NMR: 1.28-1.81 (m, 19H, Alk), 2.5 (s, 2H, NHCH ₂), 2.85-2.95 (m, 4H, Alk), 3.45-3.65 (m, 2H, Alk), 3.71-3.83 (m, 1H, CONHCH), 4.10-4.17, 4.84-4.91 (dd, 2H, CH ₂ -cycle, J=13.4), 6.41-6.45 (m, 1H, CH(furan)), 6.62-6.66 (m, 1H, CH(furan)), 6.84 (s, 1H, CH(pyrazol)), 7.46 (br, s, 1H, CH(furan)), 7.90-7.96 (m, 1H, NH) |
| 132 |  | 495,0261 | 496 |
| 133 |  | 492,6451 | 493 |
| 134 |  | 497,0636 | 498 |

267

84447

268

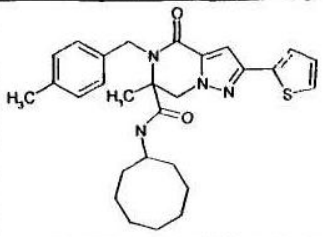
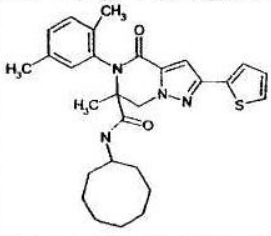
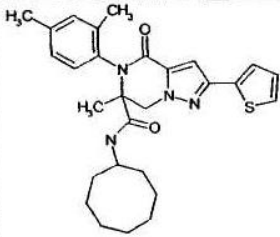
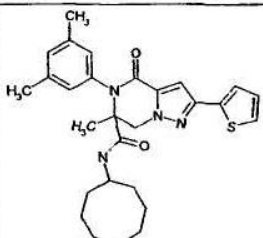
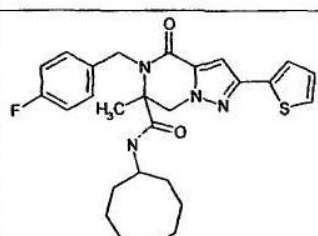
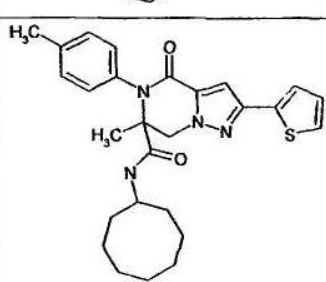
| | | | |
|-----|---|----------|-----|
| 135 |  | 490,6728 | 491 |
| 136 |  | 490,6728 | 491 |
| 137 |  | 490,6728 | 491 |
| 138 |  | 490,6728 | 491 |
| 139 |  | 494,6361 | 495 |
| 140 |  | 476,6457 | 477 |

Таблица 1.05(5)

| № п.п. | Формула | Мол.масса | Мас-спектр, m/z (M+1), ПМР спектр |
|--------|---------|-----------|---|
| 1 | | 482,58468 | LC MS, m/z: 483 (M+1). 1H NMR: 1.17-1.71 (m, 12H, 6 -CH2-, cycloheptyl); 1.377 (t, 3H, CH3, EtO-); 1.535 (s, 3H, CH3-); 3.60 (m, 1H, CH, cycloheptyl); 3.757 (s, 3H, CH3O-); 4.111 and 5.222 (dd, 2H, -CH2-(p-MeO-Ph), J=16 Hz); 4.27 and 4.99 (dd, 2H, CH2-ring, J=13.8 Hz); 4.302 ... |
| 2 | | 434,54008 | LC MS, m/z: 435 (M+1). 1H NMR: 1.27-1.74 (m, 12H, 6 -CH2-, cycloheptyl); 1.37 (t, 3H, CH3, EtO-); 1.652 (s, 3H, CH3-); 1.811 (m, 2H, CH2 (2)); 3.28 (m, 1H, CH, cycloheptyl); 3.28 (s, 3H, CH3O-); 3.38 (t, 2H, CH2 (3)); 3.64 (m, 2H, CH2 (1)); 4.26 and 4.917 (dd, 2H, CH2- ring, ... |
| 3 | | 362,43232 | 363 |
| 4 | | 334,37814 | 335 |
| 5 | | 376,45941 | 377 |

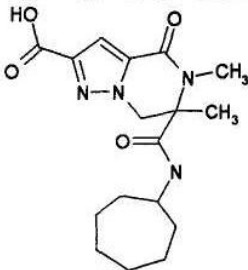
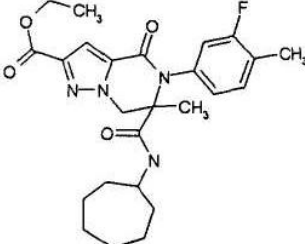
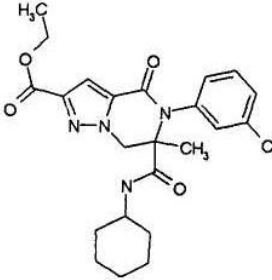
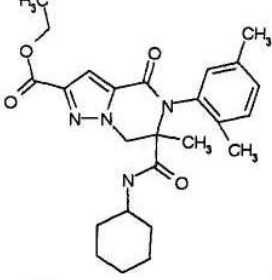
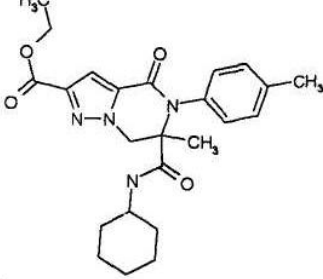
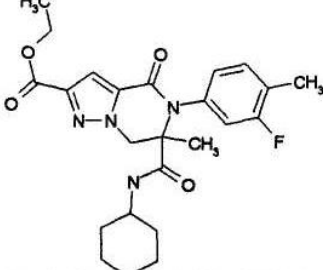
| | | | |
|----|---|-----------|-----|
| 6 |  | 348,40523 | 349 |
| 7 |  | 470,54862 | 471 |
| 8 |  | 458,94904 | 459 |
| 9 |  | 452,55819 | 453 |
| 10 |  | 438,5311 | 439 |
| 11 |  | 456,52153 | 457 |

Таблица 1.05(5)

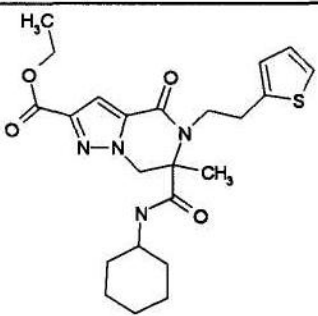
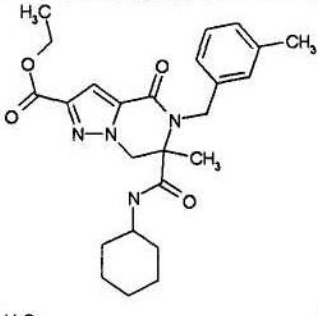
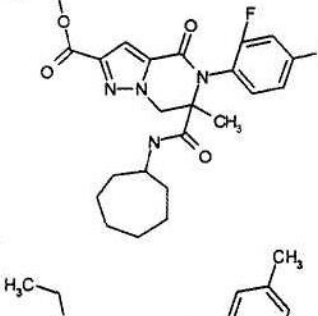
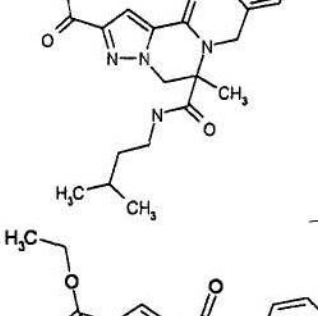
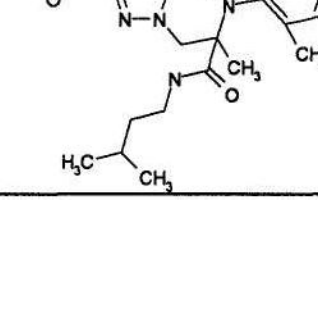
| | | | |
|----|---|-----------|-----|
| 12 |  | 458,58395 | 459 |
| 13 |  | 452,55819 | 453 |
| 14 |  | 474,51196 | 475 |
| 15 |  | 440,54704 | 441 |
| 16 |  | 444,51038 | 445 |

Таблица 1.05(5)

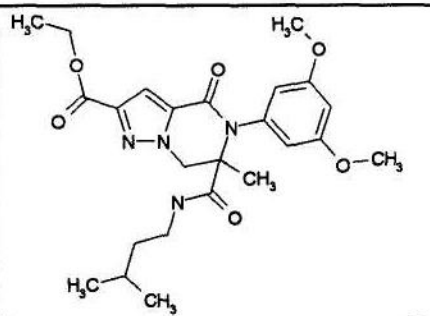
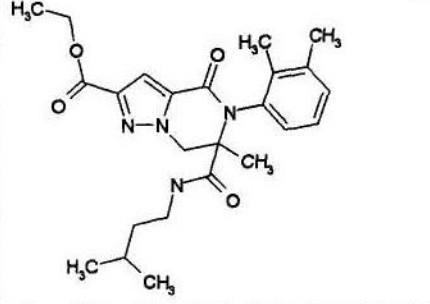
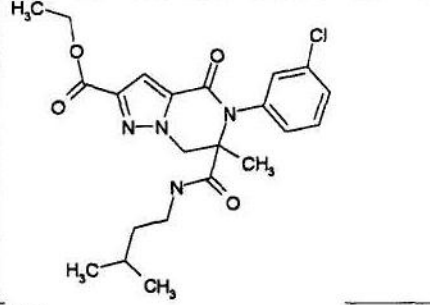
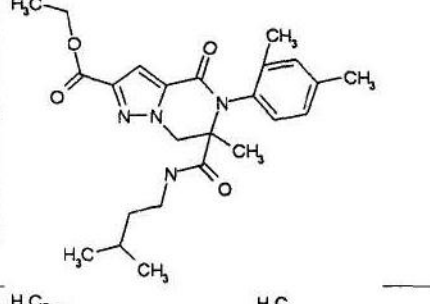
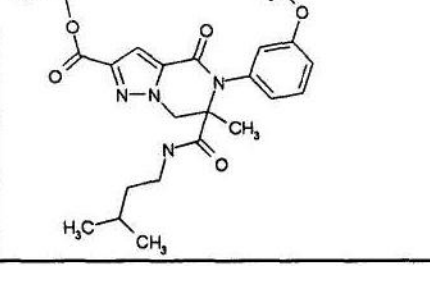
| | | | |
|----|---|-----------|-----|
| 17 |  | 472,54584 | 473 |
| 18 |  | 440,54704 | 441 |
| 19 |  | 446,93789 | 447 |
| 20 |  | 440,54704 | 441 |
| 21 |  | 442,51935 | 443 |

Таблица 1.05(5)

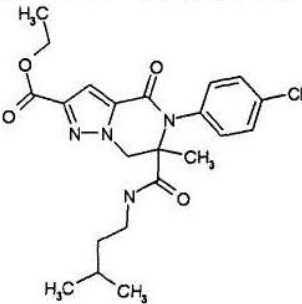
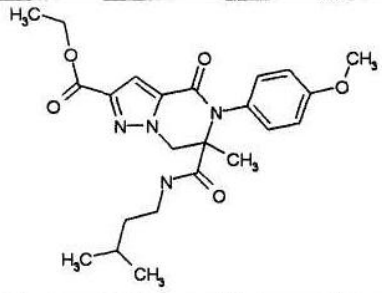
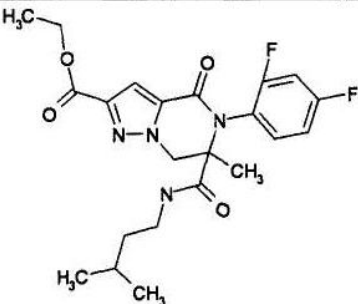
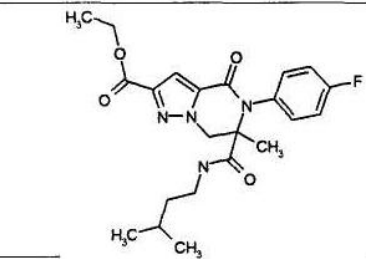
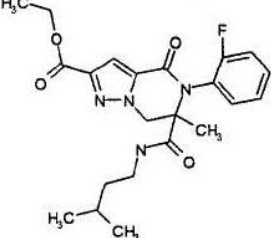
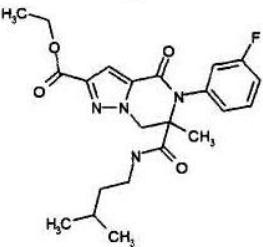
| | | | |
|----|---|-----------|-----|
| 22 |  | 446,93789 | 447 |
| 23 |  | 442,51935 | 443 |
| 24 |  | 448,47372 | 449 |
| 25 |  | 430,48329 | 431 |
| 26 |  | 430,48329 | 431 |
| 27 |  | 430,48329 | 431 |

Таблица 1.05(5)

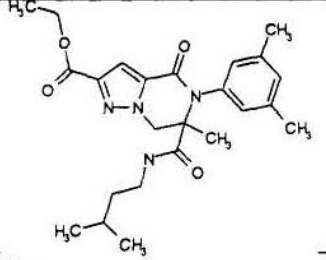
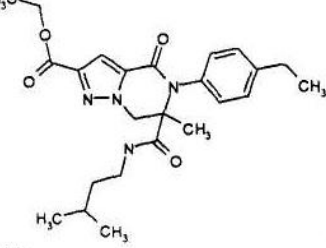
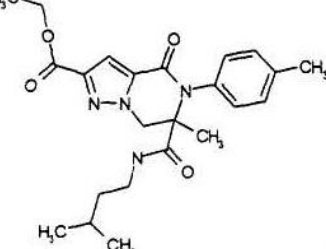
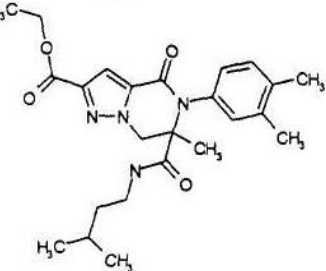
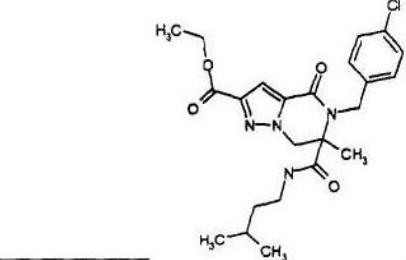
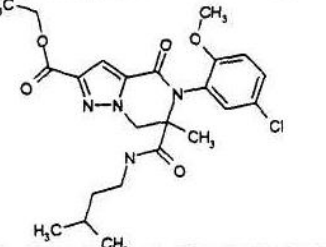
| | | | |
|----|---|-----------|-----|
| 28 |  | 440,54704 | 441 |
| 29 |  | 440,54704 | 441 |
| 30 |  | 426,51995 | 427 |
| 31 |  | 440,54704 | 441 |
| 32 |  | 460,96498 | 461 |
| 33 |  | 476,96438 | 477 |

Таблица 1.05(5)

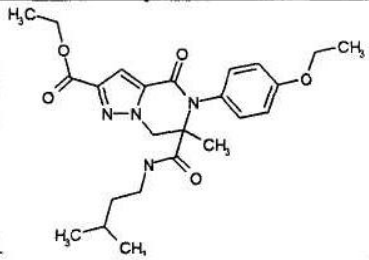
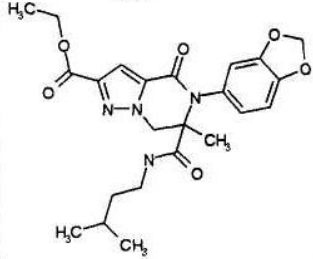
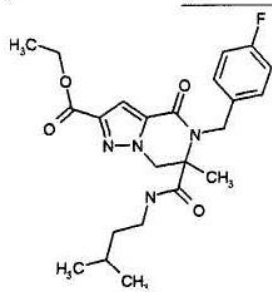
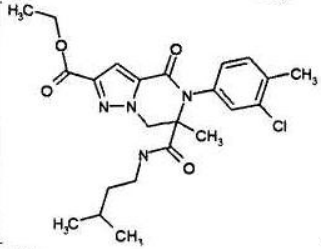
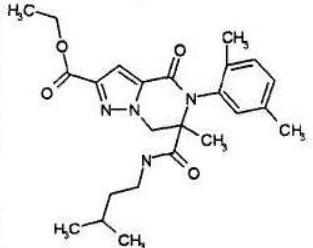
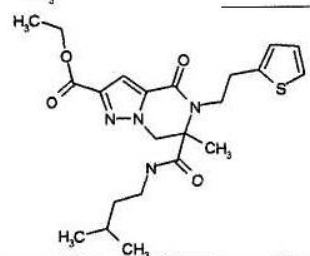
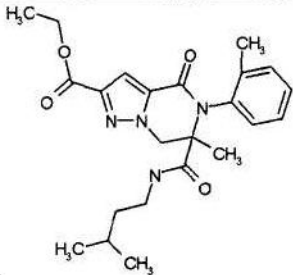
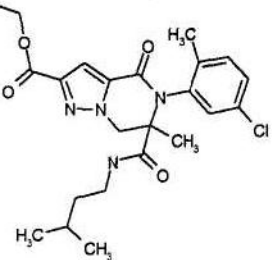
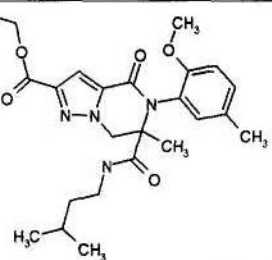
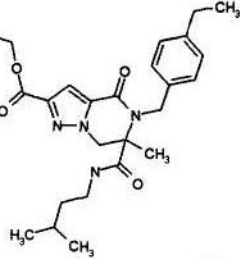
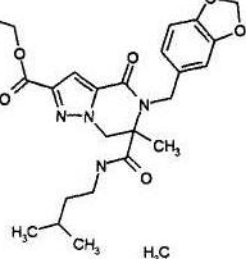
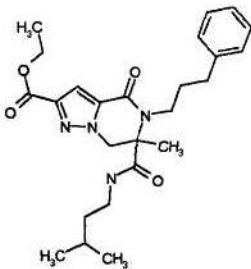
| | | | |
|----|---|-----------|-----|
| 34 |  | 456,54644 | 457 |
| 35 |  | 456,50281 | 457 |
| 36 |  | 444,51038 | 445 |
| 37 |  | 460,96498 | 461 |
| 38 |  | 440,54704 | 441 |
| 39 |  | 446,5728 | 447 |

Таблица 1.05(5)

| | | | |
|----|---|-----------|-----|
| 40 |  | 426,51995 | 427 |
| 41 |  | 460,96498 | 461 |
| 42 |  | 456,54644 | 457 |
| 43 |  | 454,57413 | 455 |
| 44 |  | 470,5299 | 471 |
| 45 |  | 454,57413 | 455 |

| | | | |
|----|--|-----------|-----|
| 46 | | 444,51038 | 445 |
| 47 | | 440,54704 | 441 |
| 48 | | 440,54704 | 441 |
| 49 | | 456,54644 | 457 |
| 50 | | 460,96498 | 461 |
| 51 | | 444,51038 | 445 |

Таблица 1.05(5)

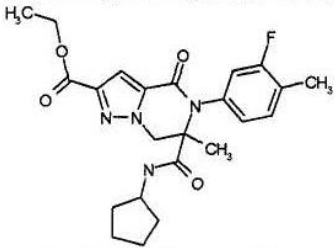
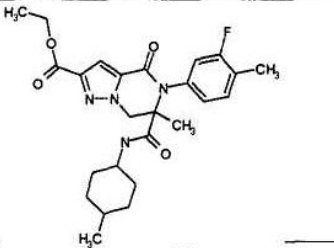
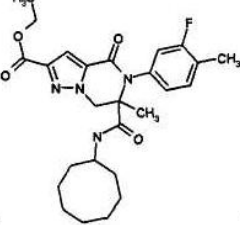
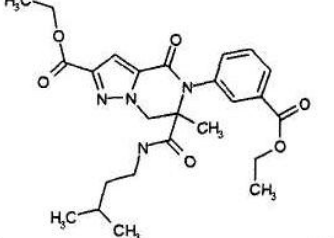
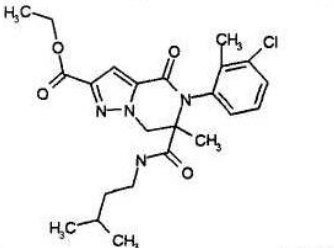
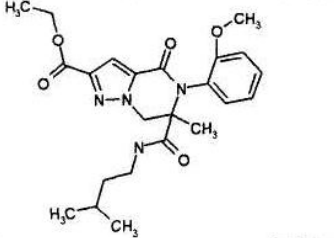
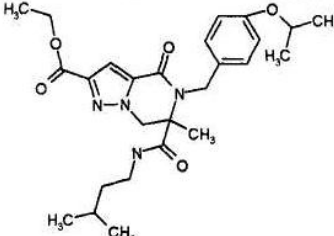
| | | | |
|----|---|-----------|-----|
| 52 |  | 442,49444 | 443 |
| 53 |  | 470,54862 | 471 |
| 54 |  | 484,57571 | 485 |
| 55 |  | 484,55699 | 485 |
| 56 |  | 460,96498 | 461 |
| 57 |  | 442,51935 | 443 |
| 58 |  | 484,60062 | 485 |

Таблица 1.05(5)

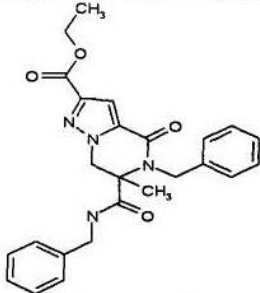
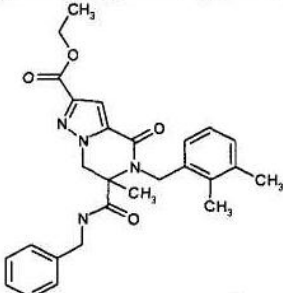
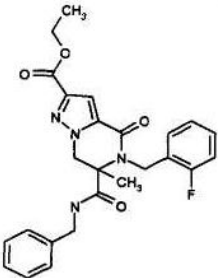
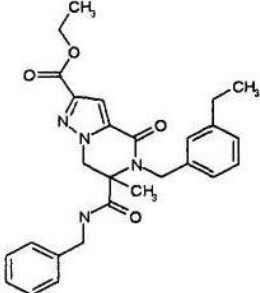
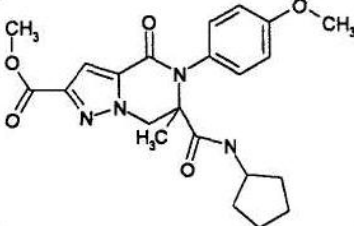
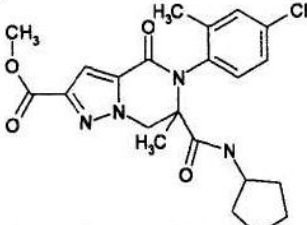
| | | | |
|----|---|-----------|-----|
| 59 |  | 446,51037 | 447 |
| 60 |  | 474,56455 | 475 |
| 61 |  | 464,5008 | 465 |
| 62 |  | 474,56455 | 475 |
| 63 |  | 426,47632 | 427 |
| 64 |  | 444,92195 | 445 |

Таблица 1.05(5)

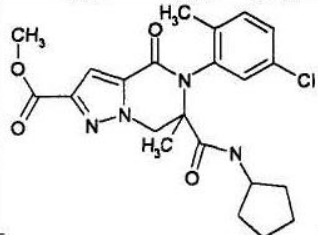
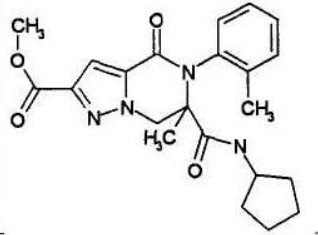
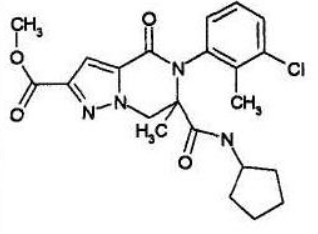
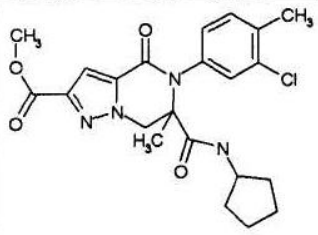
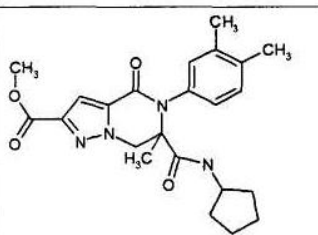
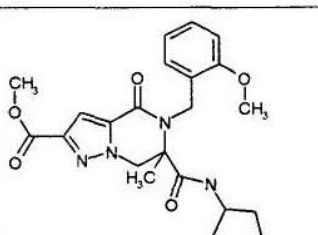
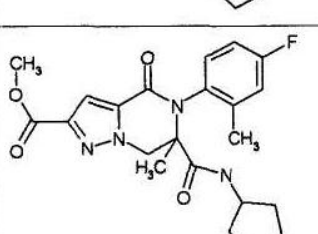
| | | | |
|----|---|-----------|-----|
| 65 |  | 444,92195 | 445 |
| 66 |  | 410,47692 | 411 |
| 67 |  | 444,92195 | 445 |
| 68 |  | 444,92195 | 445 |
| 69 |  | 424,50401 | 425 |
| 70 |  | 440,50341 | 441 |
| 71 |  | 428,46735 | 429 |

Таблица 1.05(5)

| | | | |
|----|--|-----------|-----|
| 72 | | 410,47692 | 411 |
| 73 | | 470,5299 | 471 |
| 74 | | 468,55759 | 469 |
| 75 | | 440,50341 | 441 |
| 76 | | 444,92195 | 445 |
| 77 | | 458,94904 | 459 |

Таблица 1.05(5)

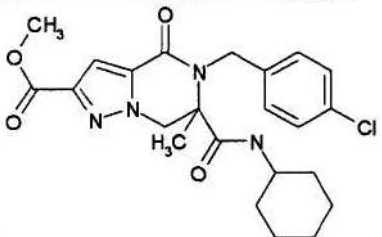
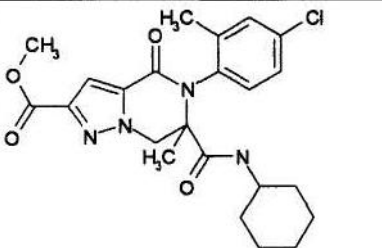
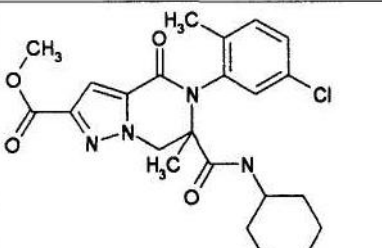
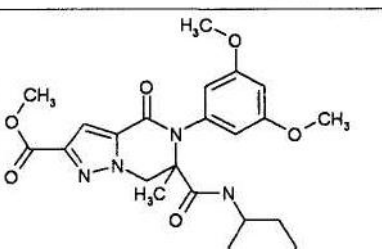

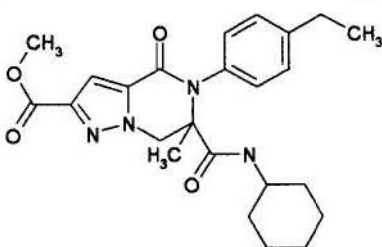
| | | | |
|----|---|-----------|-----|
| 78 |  | 458,94904 | 459 |
| 79 |  | 458,94904 | 459 |
| 80 |  | 458,94904 | 459 |
| 81 |  | 470,5299 | 471 |
| 82 |  | 438,5311 | 439 |
| 83 |  | 438,5311 | 439 |

Таблица 1.05(5)

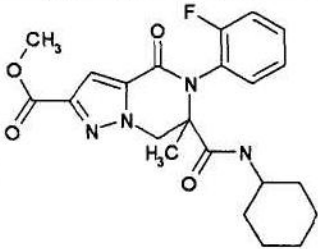
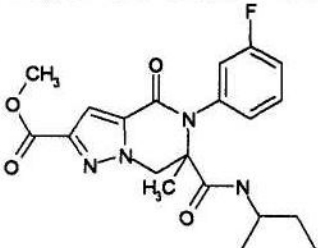
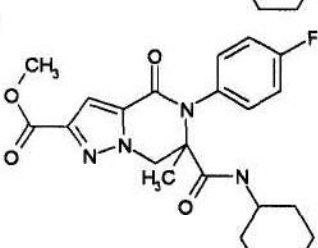

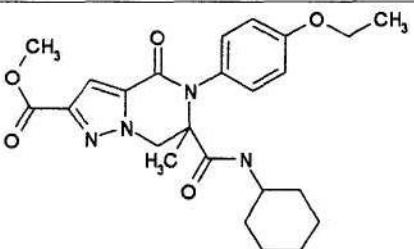
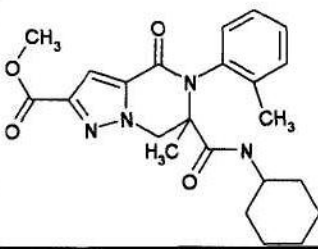
| | | | |
|----|---|-----------|-----|
| 84 |  | 428,46735 | 429 |
| 85 |  | 428,46735 | 429 |
| 86 |  | 428,46735 | 429 |
| 87 |  | 438,5311 | 439 |
| 88 |  | 454,5305 | 455 |
| 89 |  | 424,50401 | 425 |

Таблица 1.05(5)

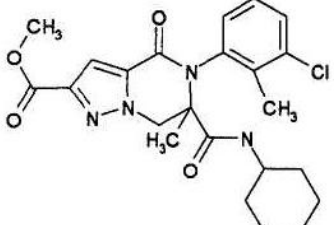
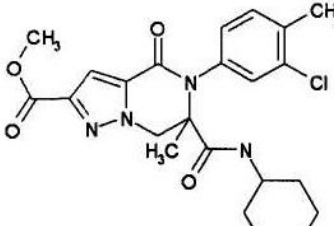
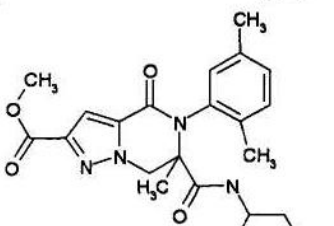
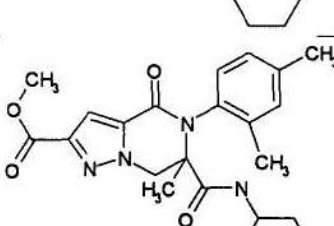
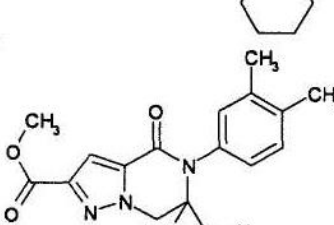
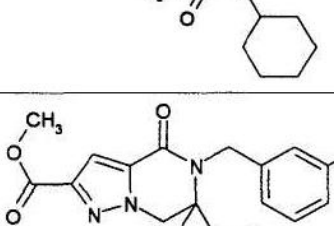
| | | | |
|----|---|-----------|-----|
| 90 |  | 458,94904 | 459 |
| 91 |  | 458,94904 | 459 |
| 92 |  | 438,5311 | 439 |
| 93 |  | 438,5311 | 439 |
| 94 |  | 438,5311 | 439 |
| 95 |  | 438,5311 | 439 |

Таблица 1.05(5)

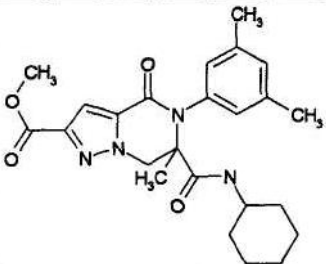
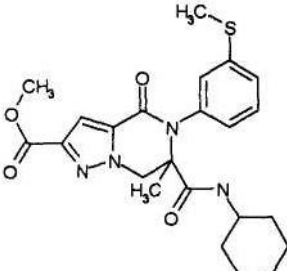
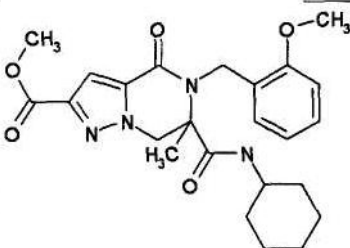
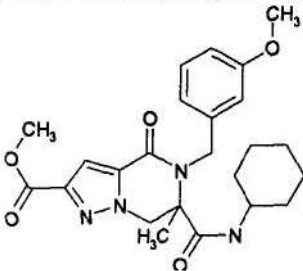

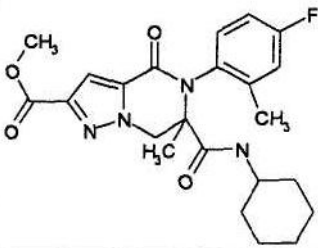
| | | | |
|-----|---|-----------|-----|
| 96 |  | 438,5311 | 439 |
| 97 |  | 456,56801 | 457 |
| 98 |  | 454,5305 | 455 |
| 99 |  | 454,5305 | 455 |
| 100 |  | 438,5311 | 439 |
| 101 |  | 442,49444 | 443 |

Таблица 1.05(5)

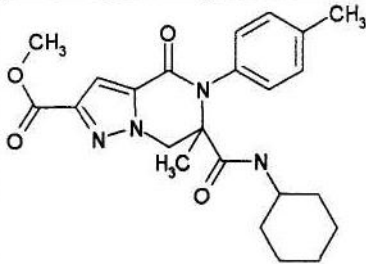
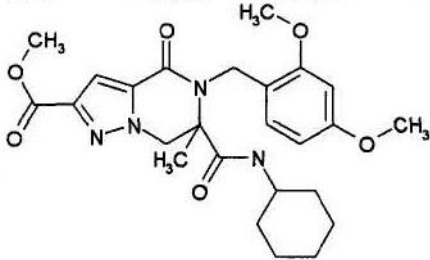
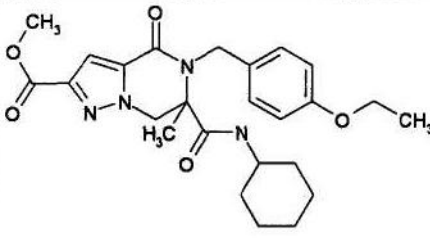
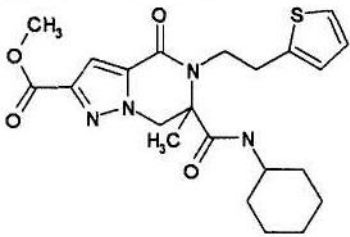
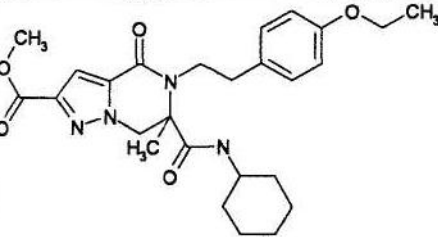
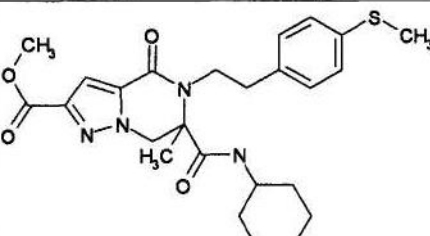
| | | | |
|-----|---|-----------|-----|
| 102 |  | 424,50401 | 425 |
| 103 |  | 484,55699 | 485 |
| 104 |  | 468,55759 | 469 |
| 105 |  | 444,55686 | 445 |
| 106 |  | 482,58468 | 483 |
| 107 |  | 484,62219 | 485 |

Таблица 1.05(5)

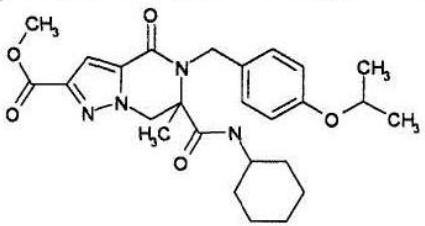
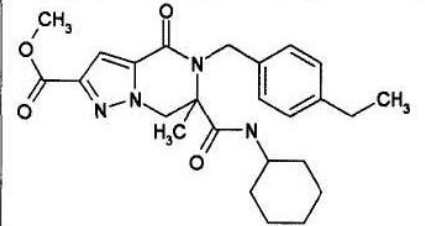

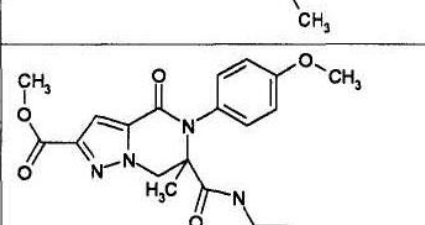
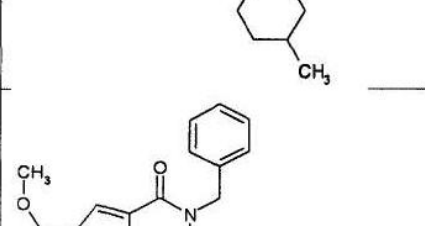
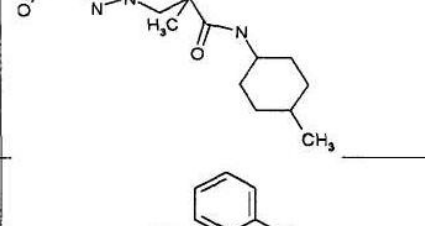
| | | | |
|-----|---|-----------|-----|
| 108 |  | 482,58468 | 483 |
| 109 |  | 452,55819 | 453 |
| 110 |  | 454,5305 | 455 |
| 111 |  | 454,5305 | 455 |
| 112 |  | 438,5311 | 439 |
| 113 |  | 472,97613 | 473 |

Таблица 1.05(5)

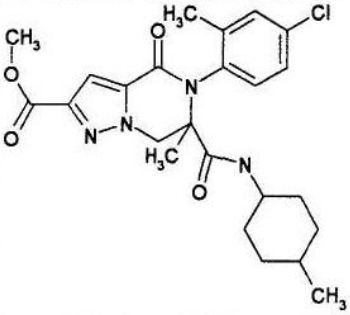
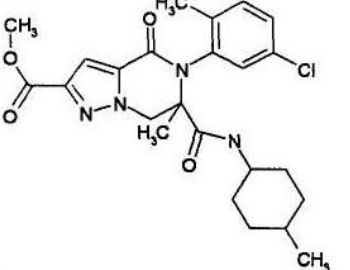
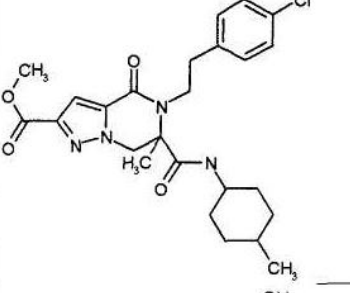
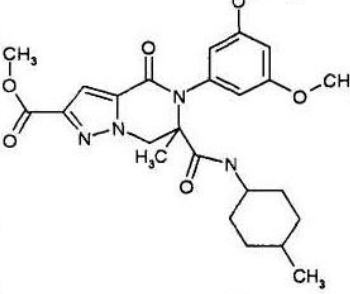
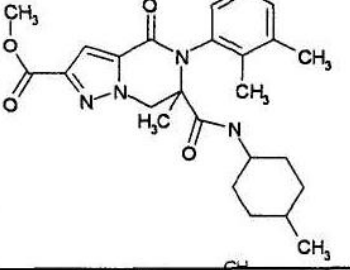
| | | | |
|-----|---|-----------|-----|
| 114 |  | 472,97613 | 473 |
| 115 |  | 472,97613 | 473 |
| 116 |  | 487,00322 | 488 |
| 117 |  | 484,55699 | 485 |
| 118 |  | 452,55819 | 453 |

Таблица 1.05(5)

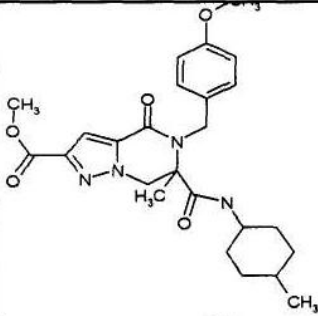
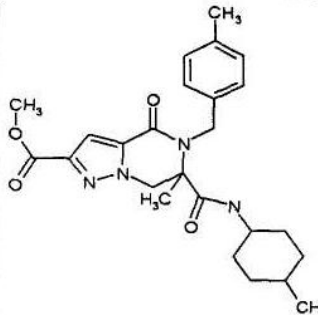
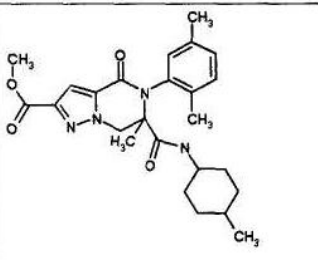
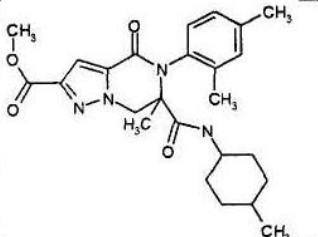
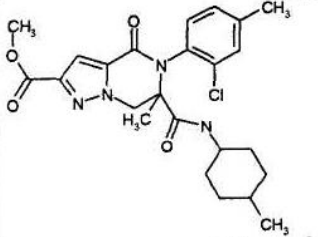
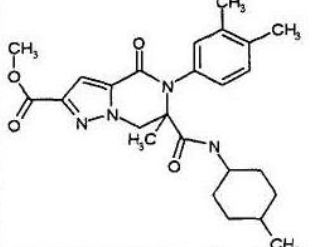
| | | | |
|-----|---|-----------|-----|
| 119 |  | 468,55759 | 469 |
| 120 |  | 452,55819 | 453 |
| 121 |  | 452,55819 | 453 |
| 122 |  | 452,55819 | 453 |
| 123 |  | 472,97613 | 473 |
| 124 |  | 452,55819 | 453 |

Таблица 1.05(5)

| | | | |
|-----|--|-----------|-----|
| 125 | | 452,55819 | 453 |
| 126 | | 452,55819 | 453 |
| 127 | | 468,55759 | 469 |
| 128 | | 456,52153 | 457 |
| 129 | | 466,58528 | 467 |
| 130 | | 452,55819 | 453 |

Таблица 1.05(5)

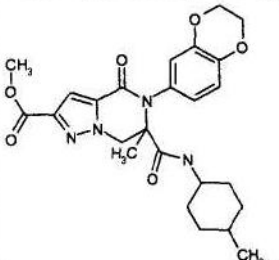
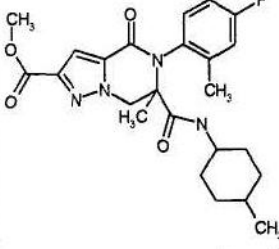
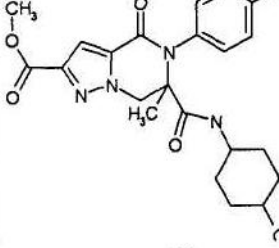
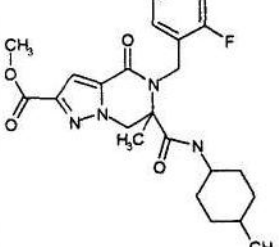
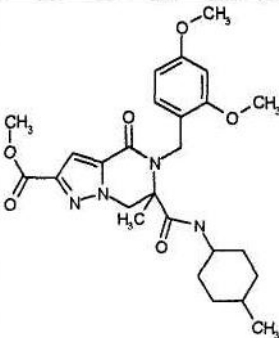
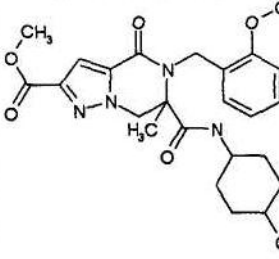
| | | | |
|-----|---|-----------|-----|
| 131 |  | 482,54105 | 483 |
| 132 |  | 456,52153 | 457 |
| 133 |  | 438,5311 | 439 |
| 134 |  | 456,52153 | 457 |
| 135 |  | 498,58408 | 499 |
| 136 |  | 498,58408 | 499 |

Таблица 1.05(5)

| | | | |
|-----|--|-----------|-----|
| 137 | | 482,58468 | 483 |
| 138 | | 458,58395 | 459 |
| 139 | | 496,61177 | 497 |
| 140 | | 452,55819 | 453 |
| 141 | | 496,61177 | 497 |
| 142 | | 454,5305 | 455 |

Таблица 1.05(5)

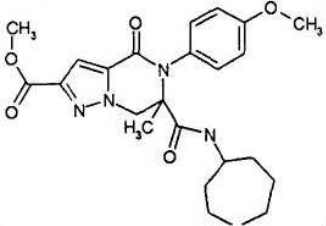
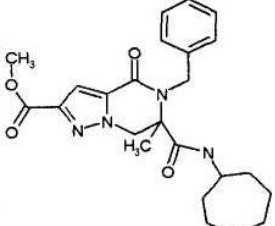
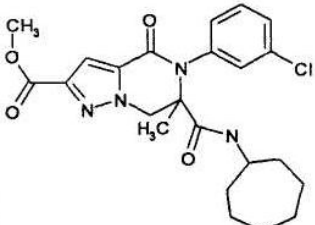
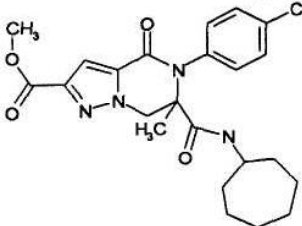
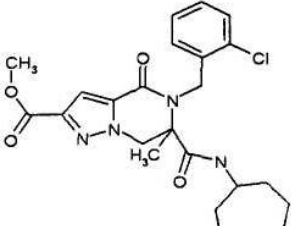
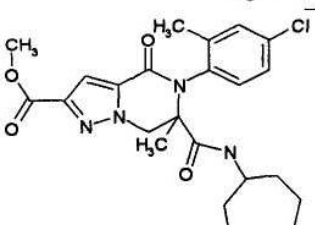
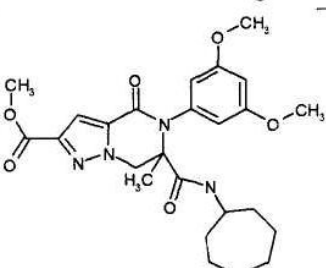
| | | | |
|-----|---|-----------|-----|
| 143 |  | 454,5305 | 455 |
| 144 |  | 438,5311 | 439 |
| 145 |  | 458,94904 | 459 |
| 146 |  | 458,94904 | 459 |
| 147 |  | 472,97613 | 473 |
| 148 |  | 472,97613 | 473 |
| 149 |  | 484,55699 | 485 |

Таблица 1.05(5)

| | | | |
|-----|--|-----------|-----|
| 150 | | 452,55819 | 453 |
| 151 | | 452,55819 | 453 |
| 152 | | 452,55819 | 453 |
| 153 | | 442,49444 | 443 |
| 154 | | 442,49444 | 443 |
| 155 | | 452,55819 | 453 |

Таблица 1.05(5)

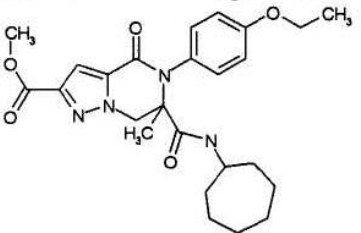
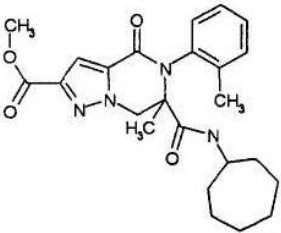
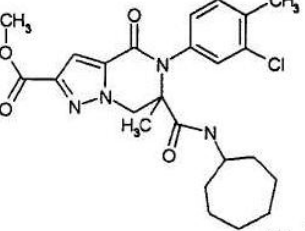
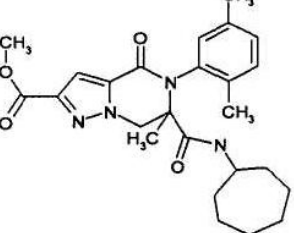
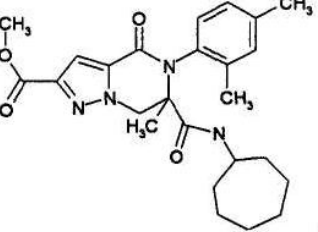
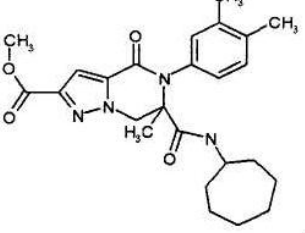
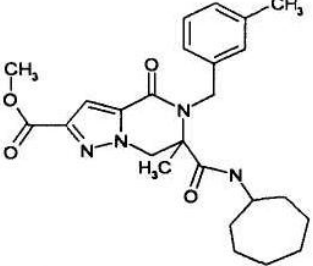
| | | | |
|-----|---|-----------|-----|
| 156 |  | 468,55759 | 469 |
| 157 |  | 438,5311 | 439 |
| 158 |  | 472,97613 | 473 |
| 159 |  | 452,55819 | 453 |
| 160 |  | 452,55819 | 453 |
| 161 |  | 452,55819 | 453 |
| 162 |  | 452,55819 | 453 |

Таблица 1.05(5)

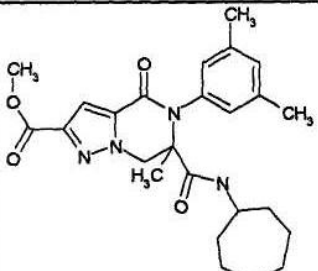
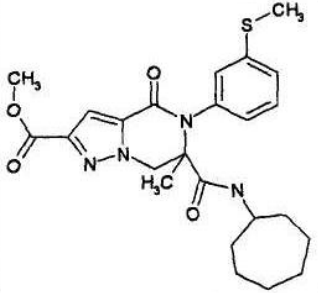
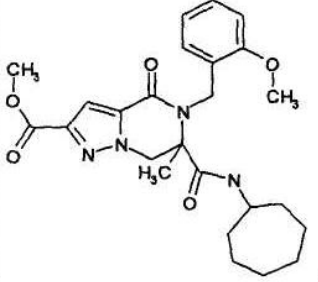
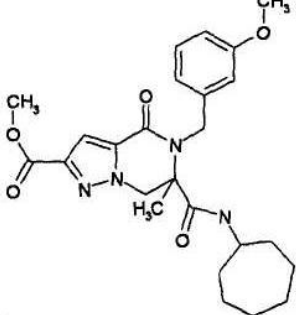
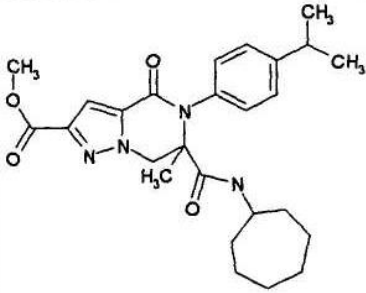
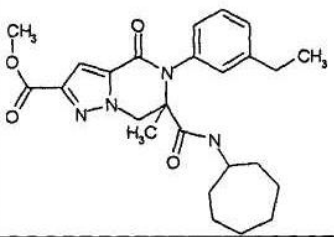
| | | | |
|-----|---|-----------|-----|
| 163 |  | 452,55819 | 453 |
| 164 |  | 470,5951 | 471 |
| 165 |  | 468,55759 | 469 |
| 166 |  | 468,55759 | 469 |
| 167 |  | 466,58528 | 467 |
| 168 |  | 452,55819 | 453 |

Таблица 1.05(5)

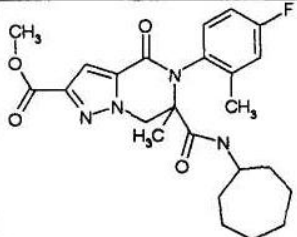
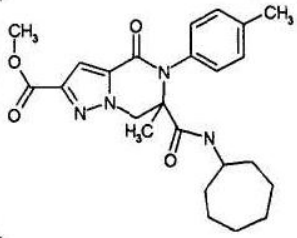
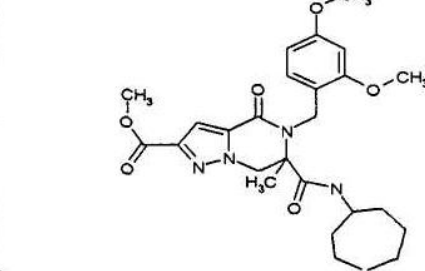
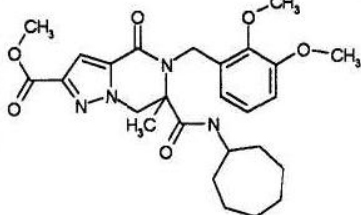
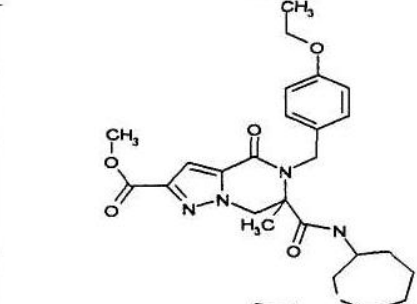
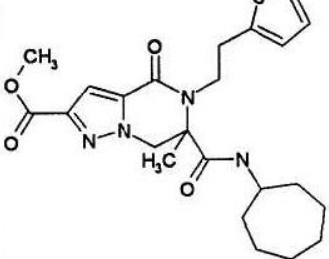
| | | | |
|-----|---|-----------|-----|
| 169 |  | 456,52153 | 457 |
| 170 |  | 438,5311 | 439 |
| 171 |  | 498,58408 | 499 |
| 172 |  | 498,58408 | 499 |
| 173 |  | 482,58468 | 483 |
| 174 |  | 458,58395 | 459 |

Таблица 1.05(5)

| | | | |
|-----|--|-----------|-----|
| 175 | | 496,61177 | 497 |
| 176 | | 496,61177 | 497 |
| 177 | | 468,55759 | 469 |
| 178 | | 498,58408 | 499 |
| 179 | | 456,52153 | 457 |
| 180 | | 466,58528 | 467 |

Таблица 1.05(5)

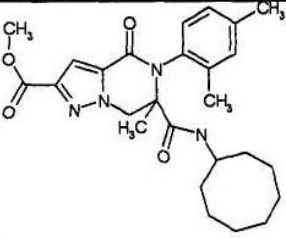
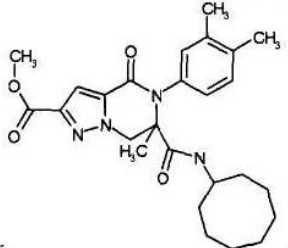
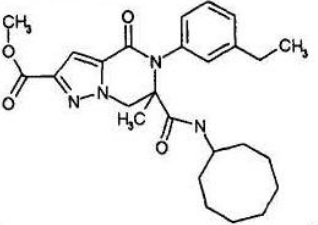
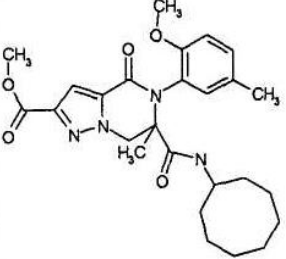
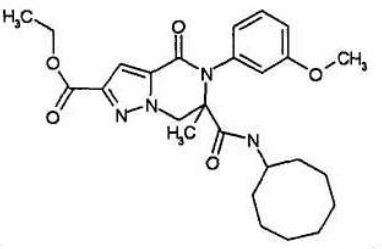
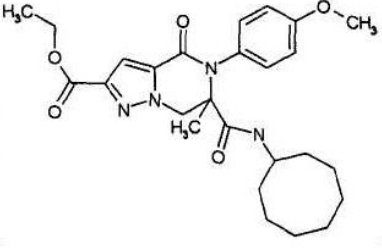
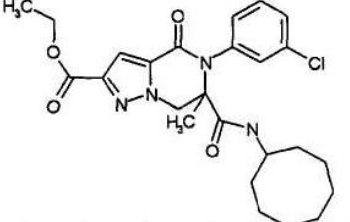
| | | | |
|-----|---|-----------|-----|
| 181 |  | 466,58528 | 467 |
| 182 |  | 466,58528 | 467 |
| 183 |  | 466,58528 | 467 |
| 184 |  | 482,58468 | 483 |
| 185 |  | 482,58468 | 483 |
| 186 |  | 482,58468 | 483 |
| 187 |  | 487,00322 | 488 |

Таблица 1.05(5)

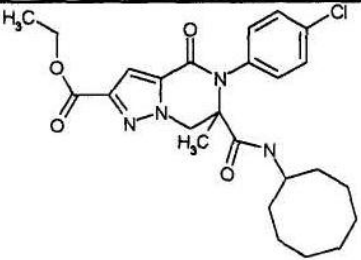
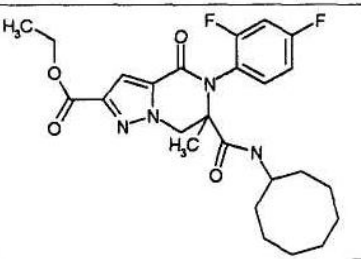
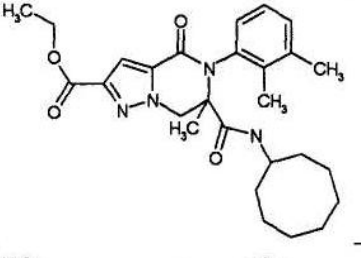
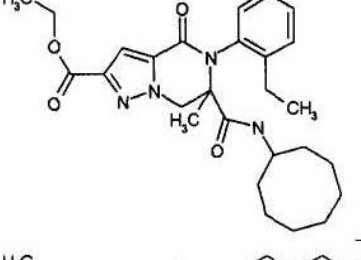
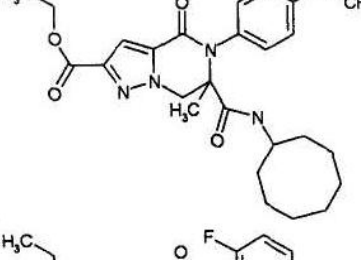
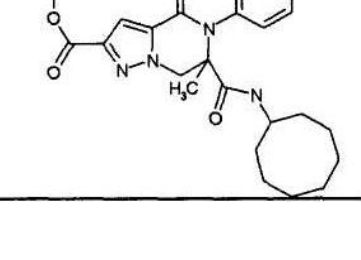
| | | | |
|-----|---|-----------|-----|
| 188 |  | 487,00322 | 488 |
| 189 |  | 488,53905 | 489 |
| 190 |  | 480,61237 | 481 |
| 191 |  | 480,61237 | 481 |
| 192 |  | 480,61237 | 481 |
| 193 |  | 470,54862 | 471 |

Таблица 1.05(5)

| | | | |
|-----|--|-----------|-----|
| 194 | | 470,54862 | 471 |
| 195 | | 470,54862 | 471 |
| 196 | | 496,61177 | 497 |
| 197 | | 480,61237 | 481 |
| 198 | | 496,61177 | 497 |

Таблица 1.05(5)

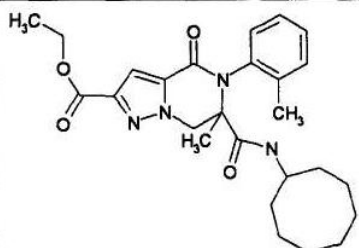
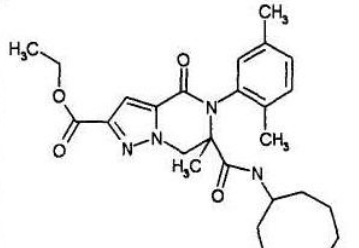
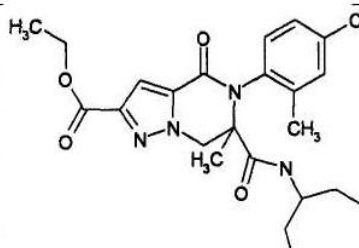
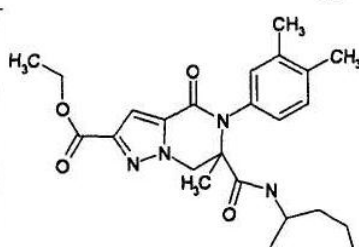
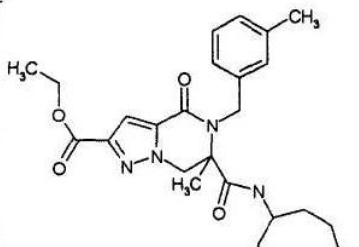
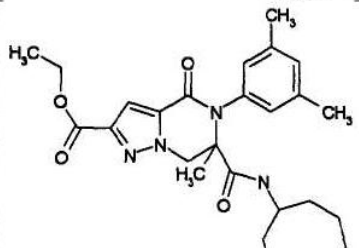
| | | | |
|-----|---|-----------|-----|
| 199 |  | 466,58528 | 467 |
| 200 |  | 480,61237 | 481 |
| 201 |  | 480,61237 | 481 |
| 202 |  | 480,61237 | 481 |
| 203 |  | 480,61237 | 481 |
| 204 |  | 480,61237 | 481 |

Таблица 1.05(5)

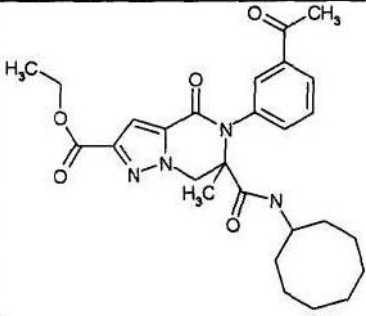
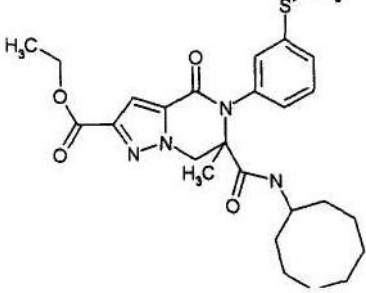
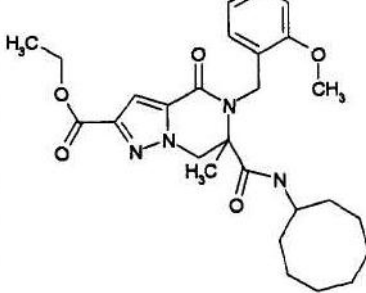
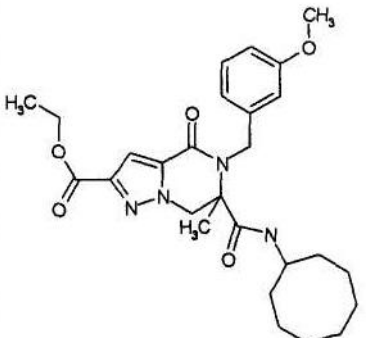
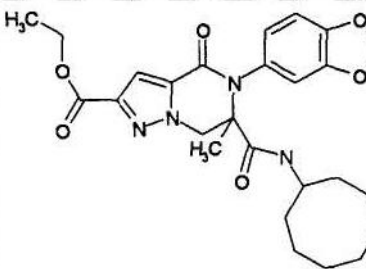
| | | | |
|-----|---|-----------|-----|
| 205 |  | 494,59583 | 495 |
| 206 |  | 498,64928 | 499 |
| 207 |  | 496,61177 | 497 |
| 208 |  | 496,61177 | 497 |
| 209 |  | 496,56814 | 497 |

Таблица 1.05(5)

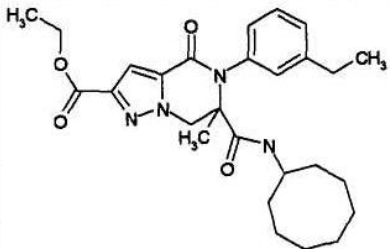
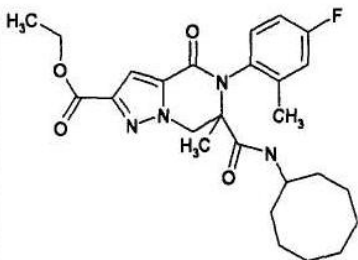
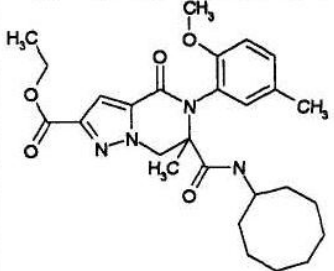
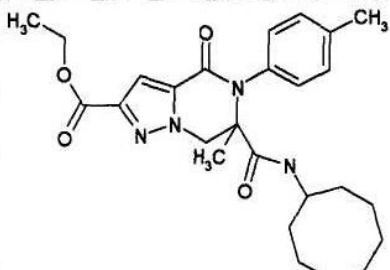
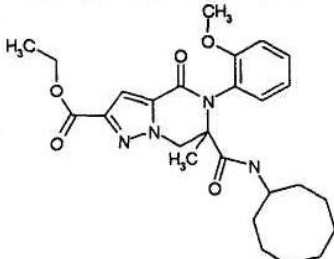
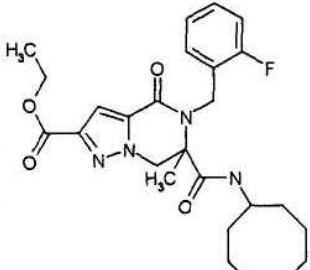
| | | | |
|-----|---|-----------|-----|
| 210 |  | 480,61237 | 481 |
| 211 |  | 484,57571 | 485 |
| 212 |  | 496,61177 | 497 |
| 213 |  | 466,58528 | 467 |
| 214 |  | 482,58468 | 483 |
| 215 |  | 484,57571 | 485 |

Таблица 1.05(5)

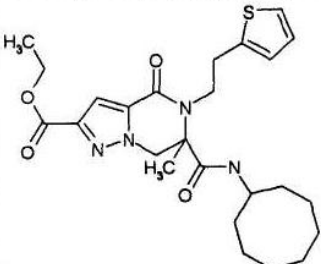
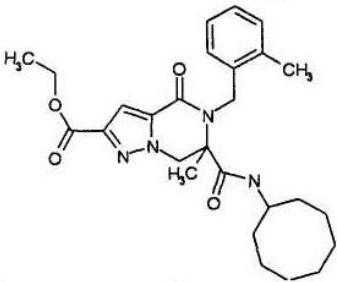
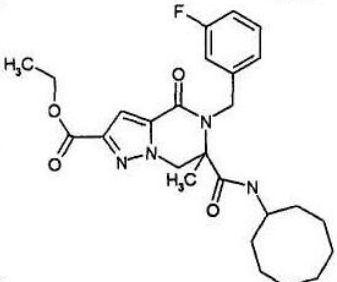
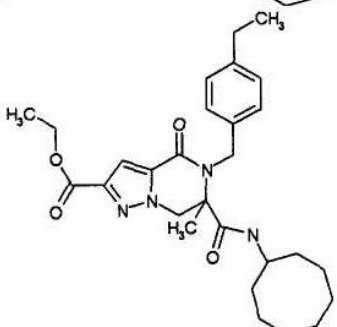
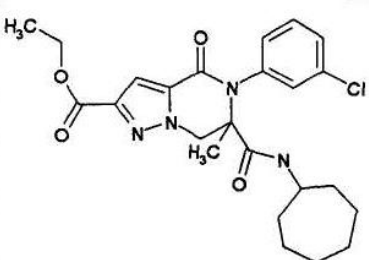
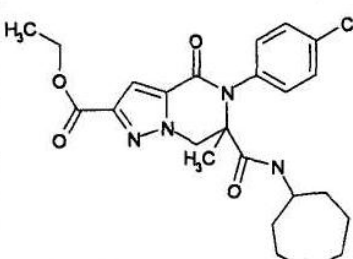
| | | | |
|-----|---|-----------|-----|
| 216 |  | 486,63813 | 487 |
| 217 |  | 480,61237 | 481 |
| 218 |  | 484,57571 | 485 |
| 219 |  | 494,63946 | 495 |
| 220 |  | 472,97613 | 473 |
| 221 |  | 472,97613 | 473 |

Таблица 1.05(5)

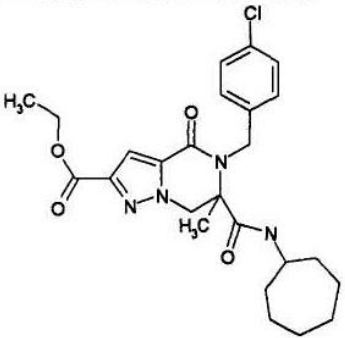
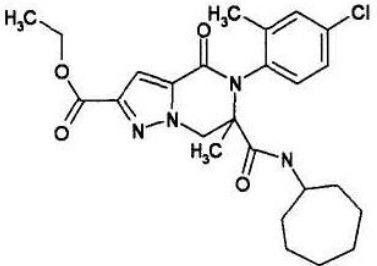
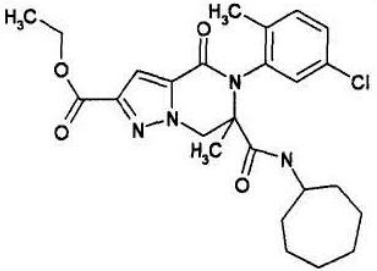
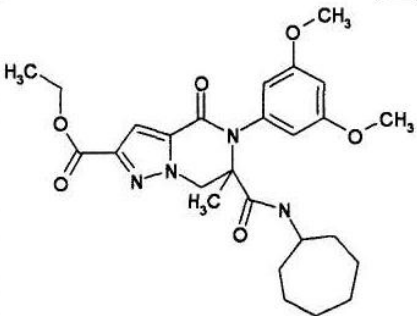
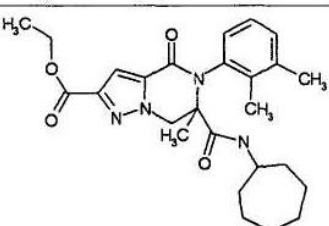
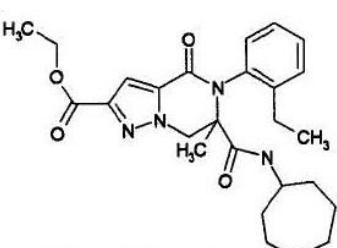
| | | | |
|-----|---|-----------|-----|
| 222 |  | 487,00322 | 488 |
| 223 |  | 487,00322 | 488 |
| 224 |  | 487,00322 | 488 |
| 225 |  | 498,58408 | 499 |
| 226 |  | 466,58528 | 467 |
| 227 |  | 466,58528 | 467 |

Таблица 1.05(5)

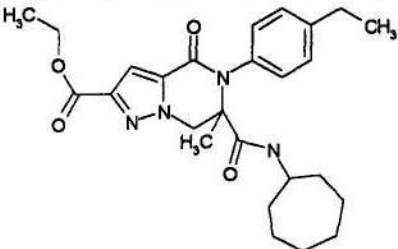
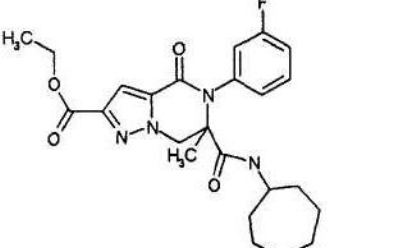
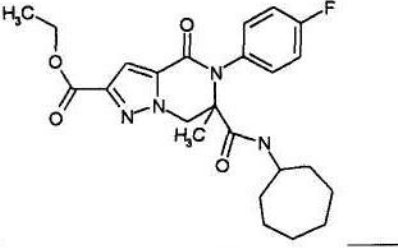
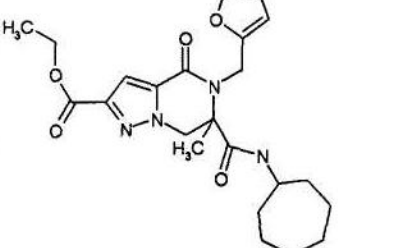
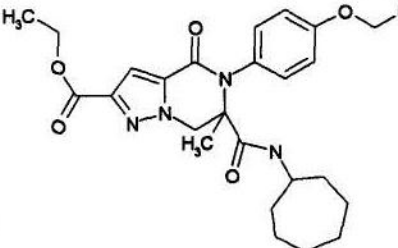
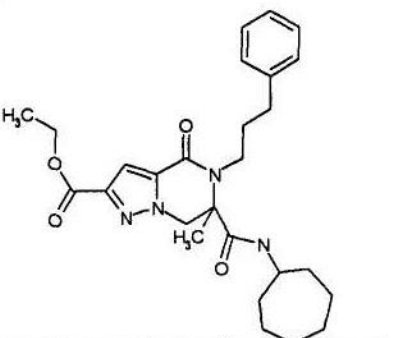
| | | | |
|-----|---|-----------|-----|
| 228 |  | 466,58528 | 467 |
| 229 |  | 456,52153 | 457 |
| 230 |  | 456,52153 | 457 |
| 231 |  | 442,51935 | 443 |
| 232 |  | 482,58468 | 483 |
| 233 |  | 480,61237 | 481 |

Таблица 1.05(5)

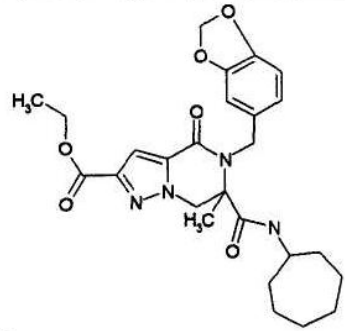
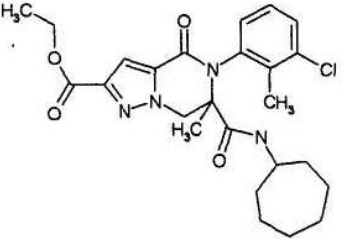
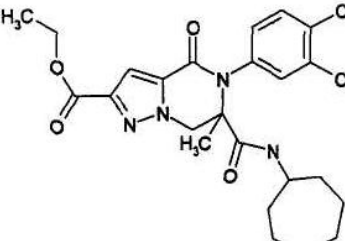
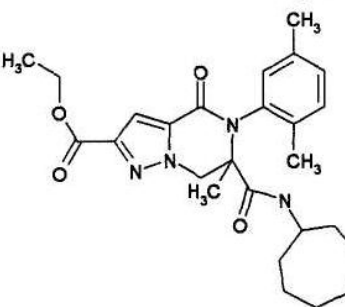
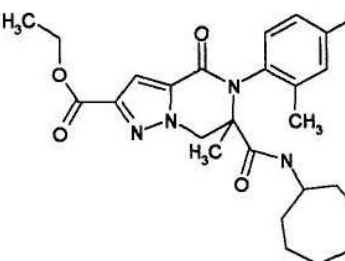
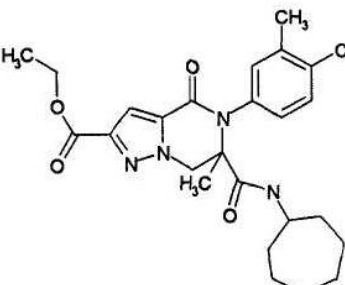
| | | | |
|-----|---|-----------|-----|
| 234 |  | 496,56814 | 497 |
| 235 |  | 487,00322 | 488 |
| 236 |  | 487,00322 | 488 |
| 237 |  | 466,58528 | 467 |
| 238 |  | 466,58528 | 467 |
| 239 |  | 466,58528 | 467 |

Таблица 1.05(5)

| | | | |
|-----|--|-----------|-----|
| 240 | | 466,58528 | 467 |
| 241 | | 466,58528 | 467 |
| 242 | | 484,62219 | 485 |
| 243 | | 482,58468 | 483 |
| 244 | | 482,54105 | 483 |

Таблица 1.05(5)

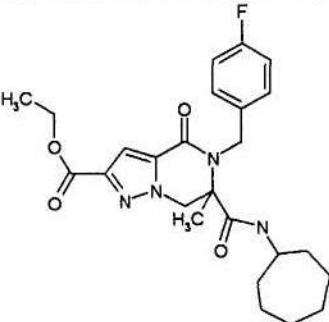
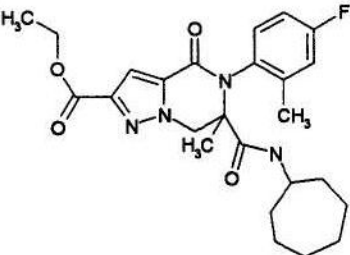
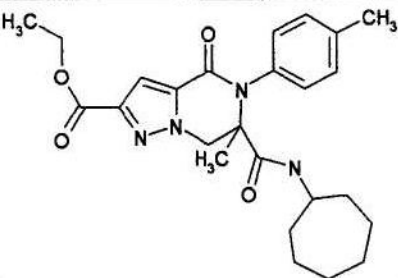
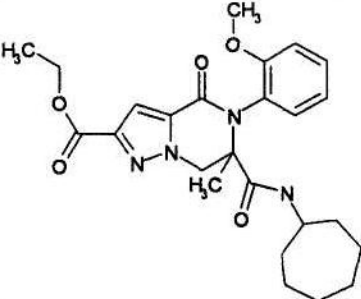
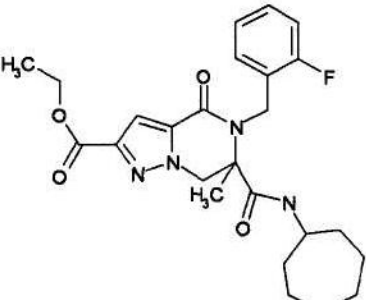
| | | | |
|-----|---|-----------|-----|
| 245 |  | 470,54862 | 471 |
| 246 |  | 470,54862 | 471 |
| 247 |  | 452,55819 | 453 |
| 248 |  | 468,55759 | 469 |
| 249 |  | 470,54862 | 471 |

Таблица 1.05(5)

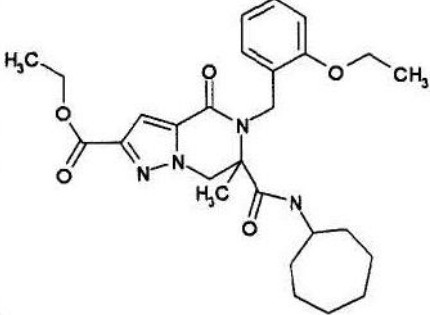
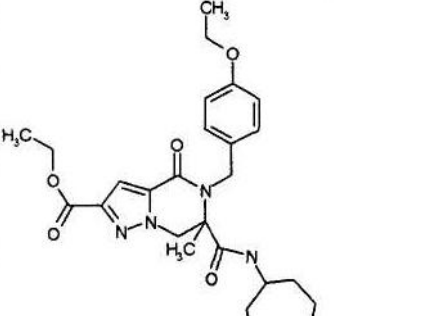
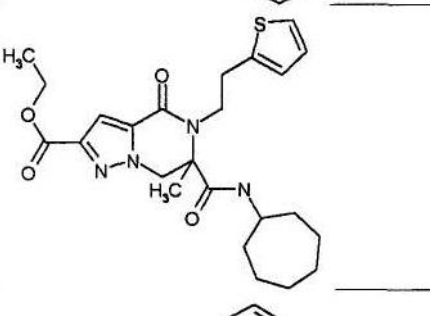
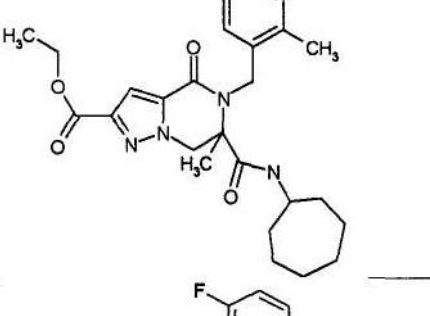
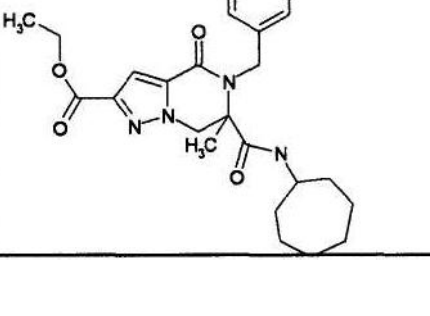
| | | | |
|-----|---|-----------|-----|
| 250 |  | 496,61177 | 497 |
| 251 |  | 496,61177 | 497 |
| 252 |  | 472,61104 | 473 |
| 253 |  | 466,58528 | 467 |
| 254 |  | 470,54862 | 471 |

Таблица 1.05(5)

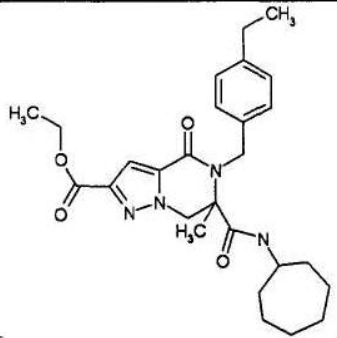
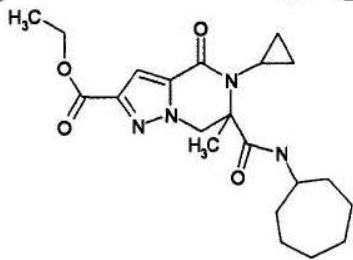
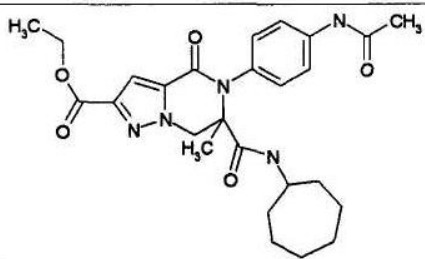
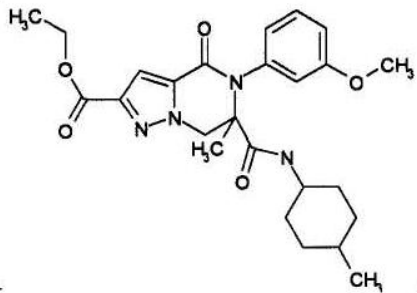
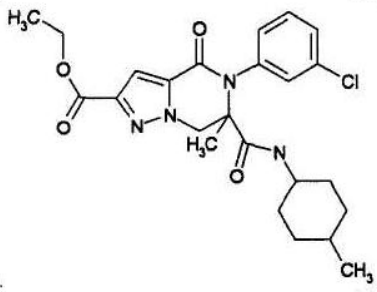
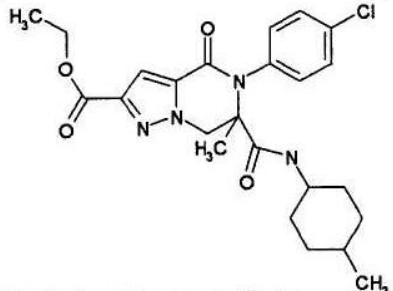
| | | | |
|-----|---|-----------|-----|
| 255 |  | 480,61237 | 481 |
| 256 |  | 402,49765 | 403 |
| 257 |  | 495,58341 | 496 |
| 258 |  | 468,55759 | 469 |
| 259 |  | 472,97613 | 473 |
| 260 |  | 472,97613 | 473 |

Таблица 1.05(5)

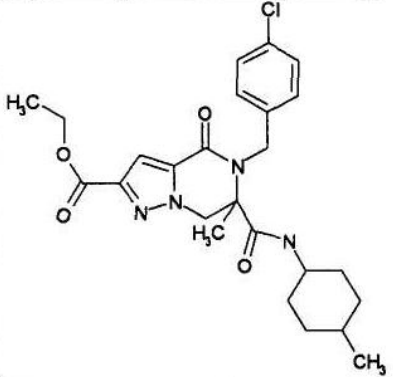
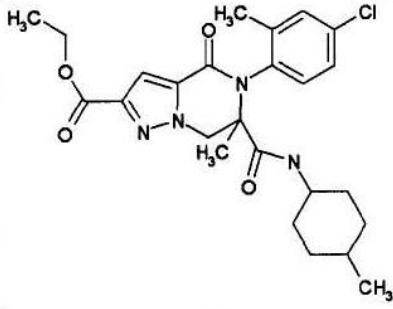
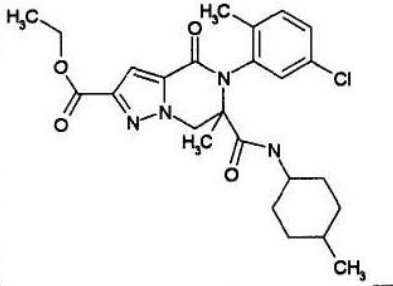
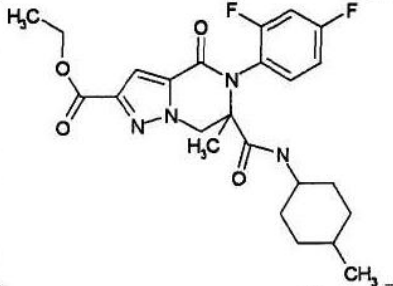
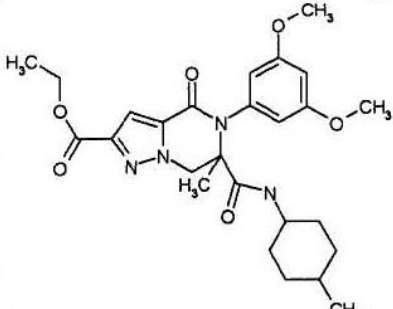
| | | | |
|-----|---|-----------|-----|
| 261 |  | 487,00322 | 488 |
| 262 |  | 487,00322 | 488 |
| 263 |  | 487,00322 | 488 |
| 264 |  | 474,51196 | 475 |
| 265 |  | 498,58408 | 499 |

Таблица 1.05(5)

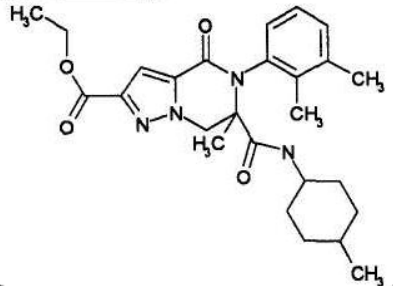
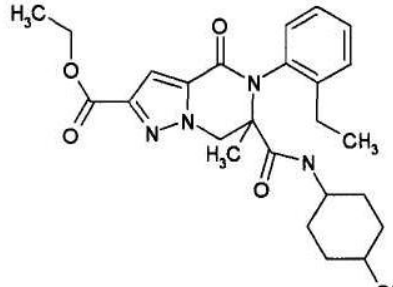
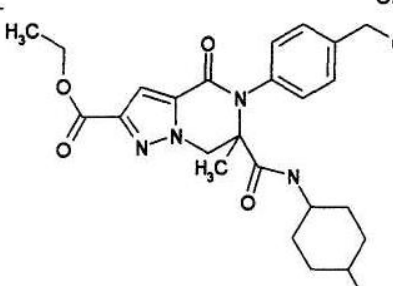
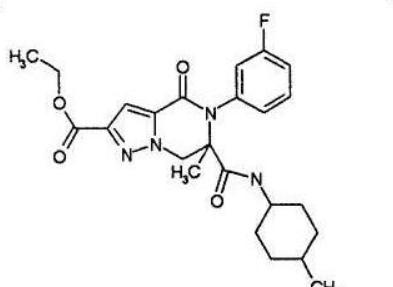
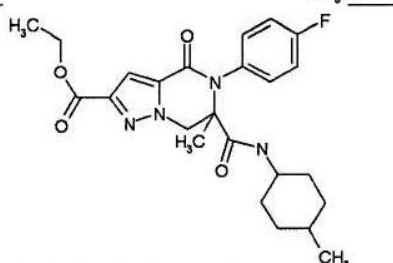
| | | | |
|-----|---|-----------|-----|
| 266 |  | 466,58528 | 467 |
| 267 |  | 466,58528 | 467 |
| 268 |  | 466,58528 | 467 |
| 269 |  | 456,52153 | 457 |
| 270 |  | 456,52153 | 457 |

Таблица 1.05(5)

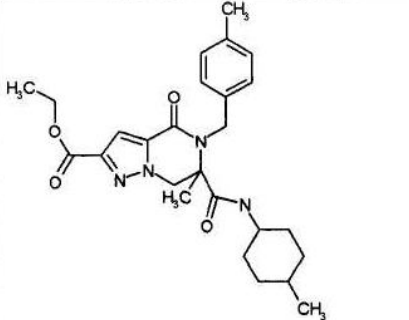
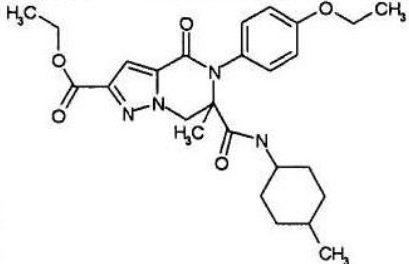
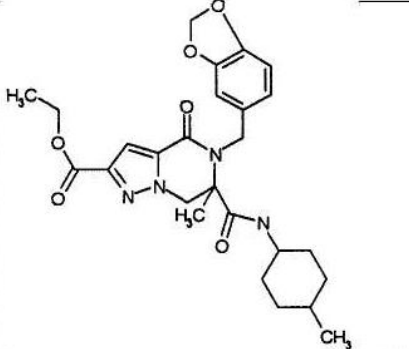
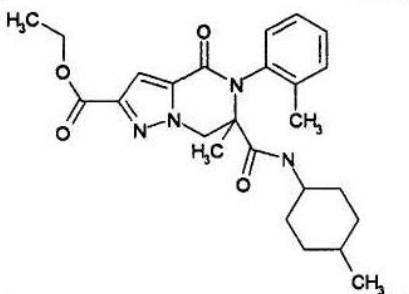
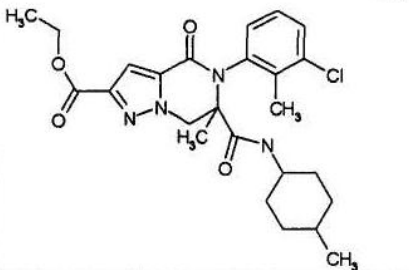
| | | | |
|-----|---|-----------|-----|
| 271 |  | 466,58528 | 467 |
| 272 |  | 482,58468 | 483 |
| 273 |  | 496,56814 | 497 |
| 274 |  | 452,55819 | 453 |
| 275 |  | 487,00322 | 488 |

Таблица 1.05(5)

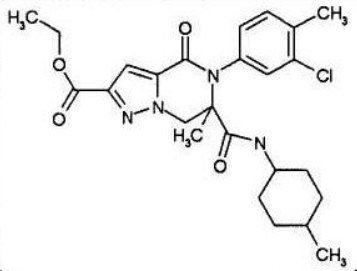
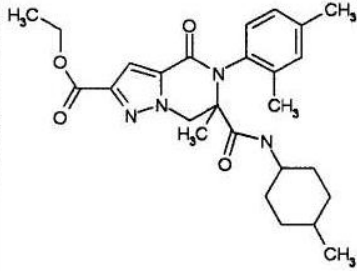
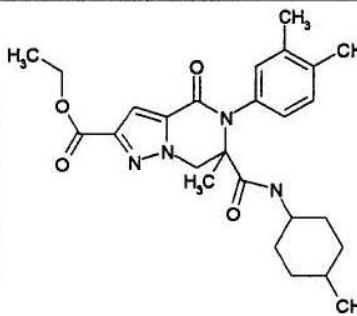
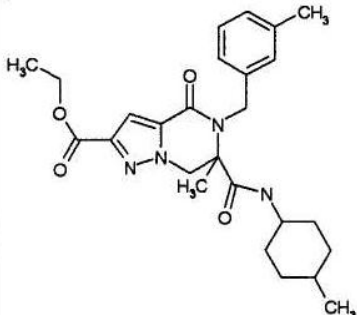
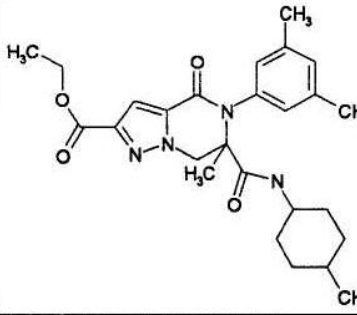
| | | | |
|-----|---|-----------|-----|
| 276 |  | 487,00322 | 488 |
| 277 |  | 466,58528 | 467 |
| 278 |  | 466,58528 | 467 |
| 279 |  | 466,58528 | 467 |
| 280 |  | 466,58528 | 467 |

Таблица 1.05(5)

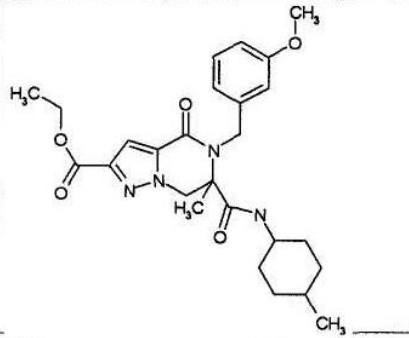
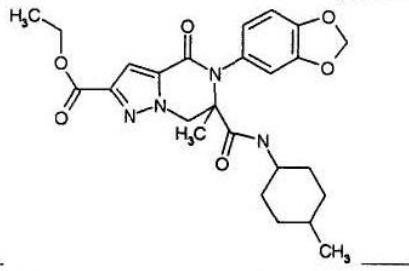
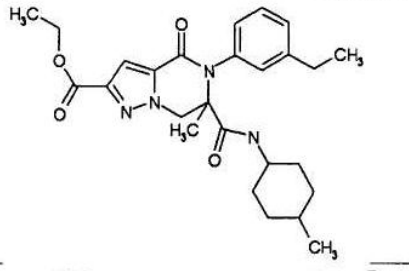
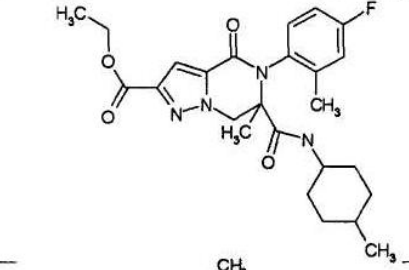
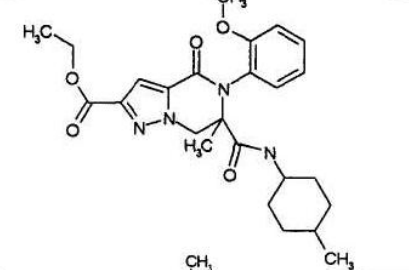
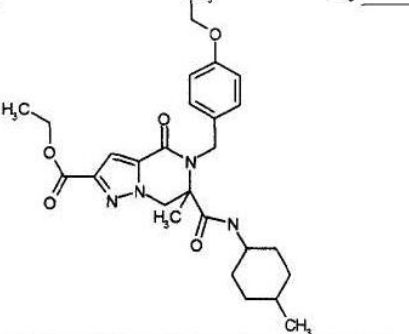
| | | | |
|-----|---|-----------|-----|
| 281 |  | 482,58468 | 483 |
| 282 |  | 482,54105 | 483 |
| 283 |  | 466,58528 | 467 |
| 284 |  | 470,54862 | 471 |
| 285 |  | 468,55759 | 469 |
| 286 |  | 496,61177 | 497 |

Таблица 1.05(5)

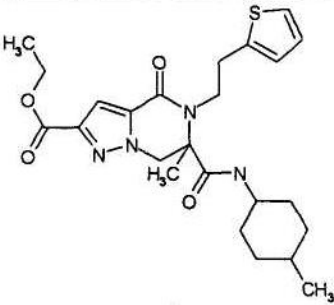
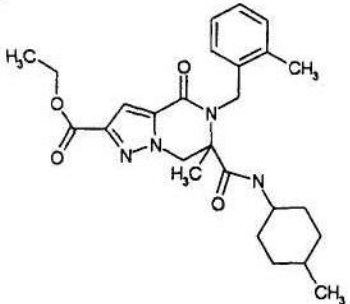
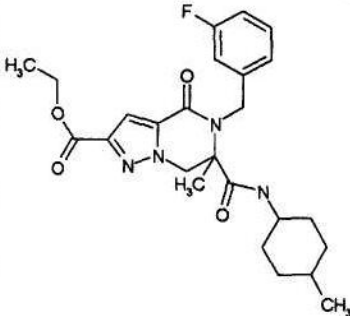
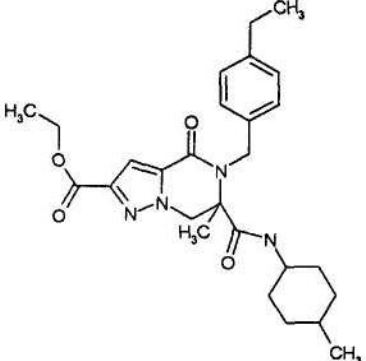
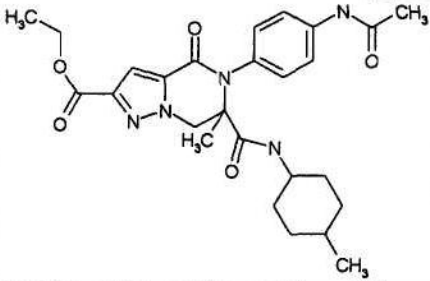
| | | | |
|-----|---|-----------|-----|
| 287 |  | 472,61104 | 473 |
| 288 |  | 466,58528 | 467 |
| 289 |  | 470,54862 | 471 |
| 290 |  | 480,61237 | 481 |
| 291 |  | 495,58341 | 496 |

Таблица 1.05(5)

| | | | |
|-----|--|-----------|-----|
| 292 | | 454,5305 | 455 |
| 293 | | 438,5311 | 439 |
| 294 | | 458,94904 | 459 |
| 295 | | 472,97613 | 473 |
| 296 | | 472,97613 | 473 |
| 297 | | 472,97613 | 473 |

Таблица 1.05(5)

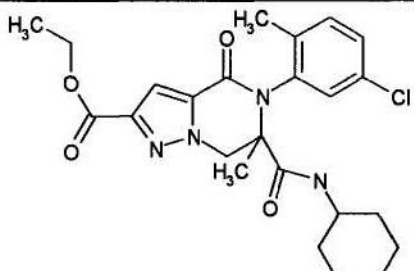
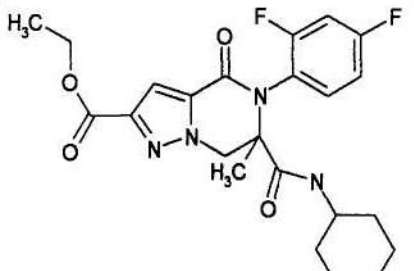
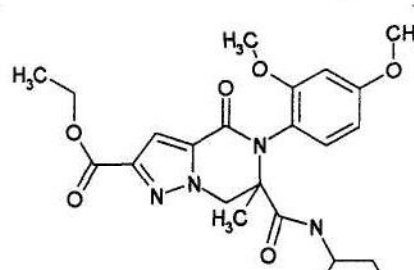
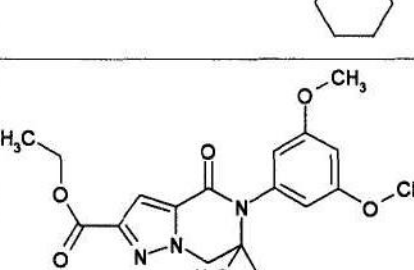
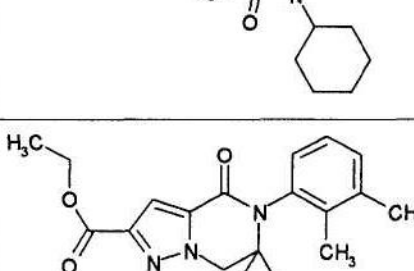
| | | | |
|-----|---|-----------|-----|
| 298 |  | 472,97613 | 473 |
| 299 |  | 460,48487 | 461 |
| 300 |  | 484,55699 | 485 |
| 301 |  | 484,55699 | 485 |
| 302 |  | 452,55819 | 453 |

Таблица 1.05(5)

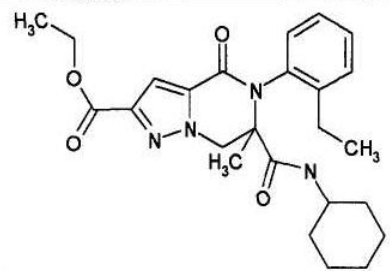
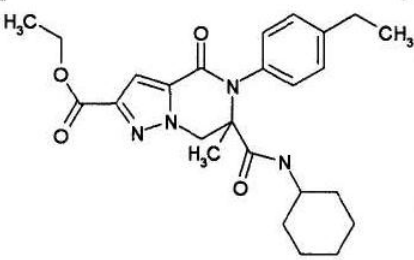
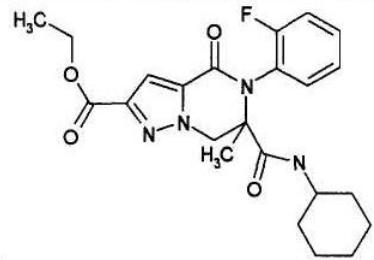
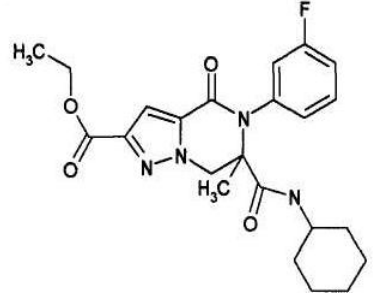
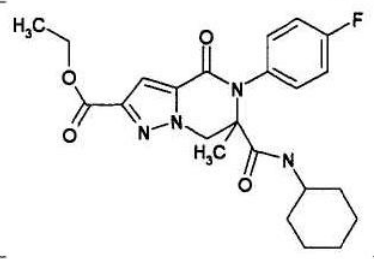
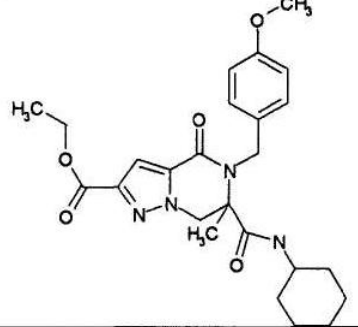
| | | | |
|-----|---|-----------|-----|
| 303 |  | 452,55819 | 453 |
| 304 |  | 452,55819 | 453 |
| 305 |  | 442,49444 | 443 |
| 306 |  | 442,49444 | 443 |
| 307 |  | 442,49444 | 443 |
| 308 |  | 468,55759 | 469 |

Таблица 1.05(5)

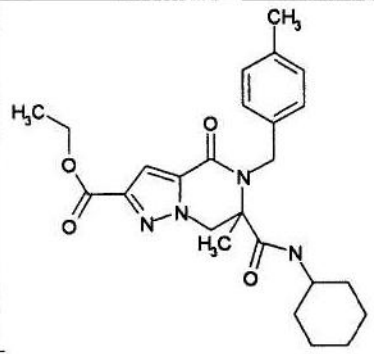
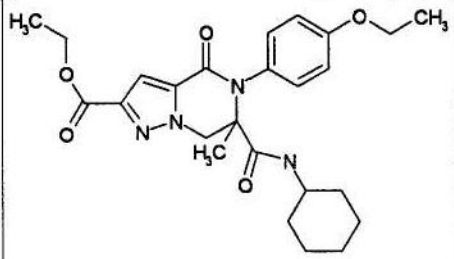
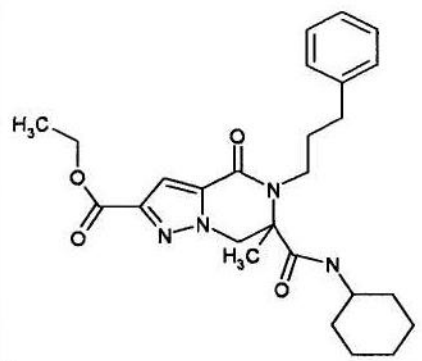
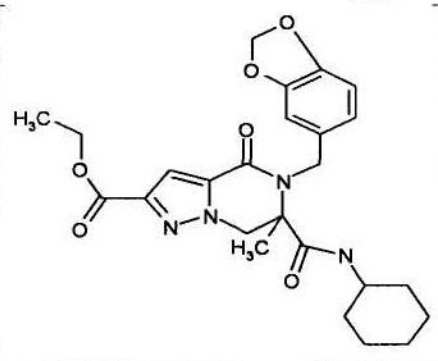
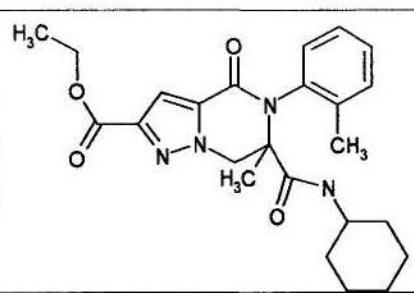
| | | | |
|-----|---|-----------|-----|
| 309 |  | 452,55819 | 453 |
| 310 |  | 468,55759 | 469 |
| 311 |  | 466,58528 | 467 |
| 312 |  | 482,54105 | 483 |
| 313 |  | 438,5311 | 439 |

Таблица 1.05(5)

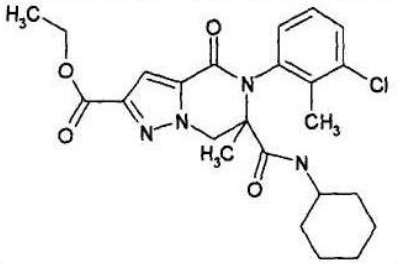
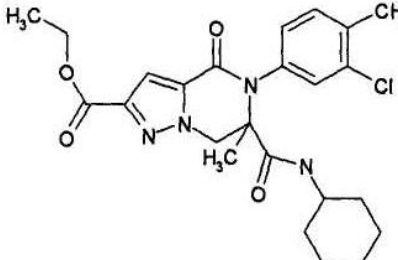
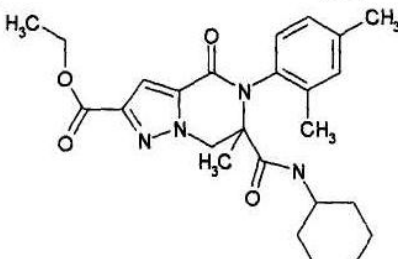
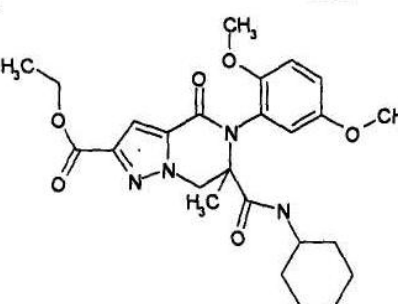
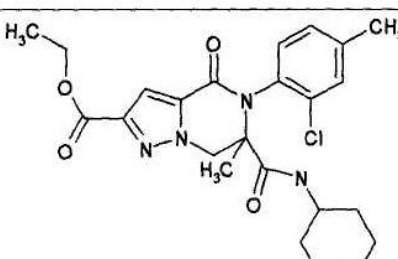
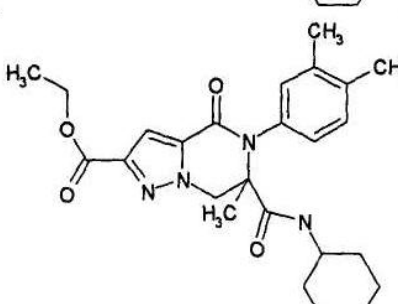
| | | | |
|-----|---|-----------|-----|
| 314 |  | 472,97613 | 473 |
| 315 |  | 472,97613 | 473 |
| 316 |  | 452,55819 | 453 |
| 317 |  | 484,55699 | 485 |
| 318 |  | 472,97613 | 473 |
| 319 |  | 452,55819 | 453 |

Таблица 1.05(5)

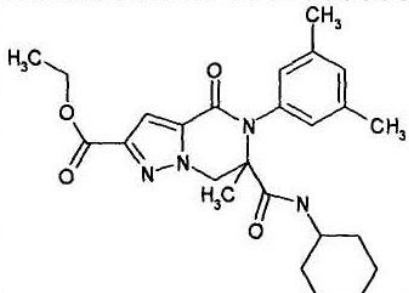
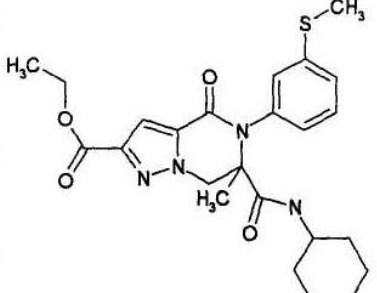
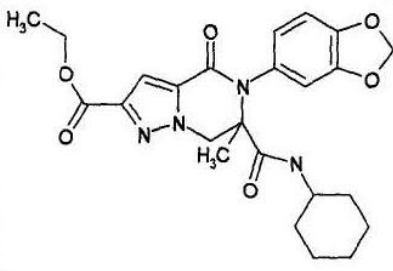
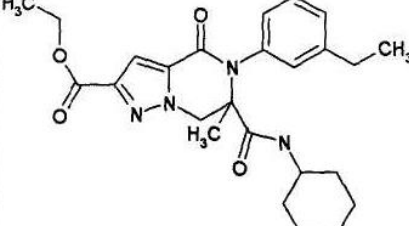
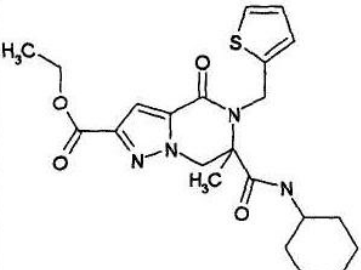
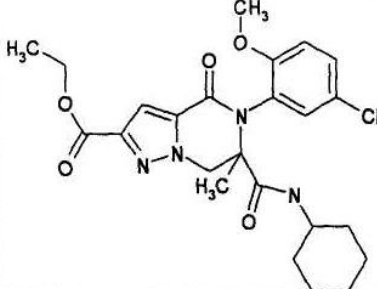
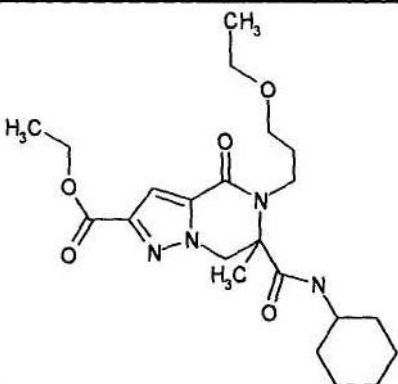
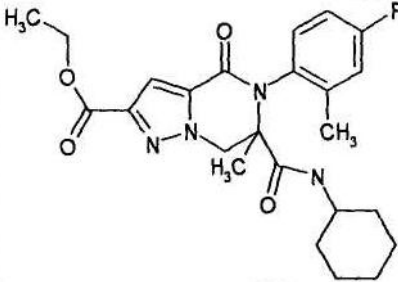
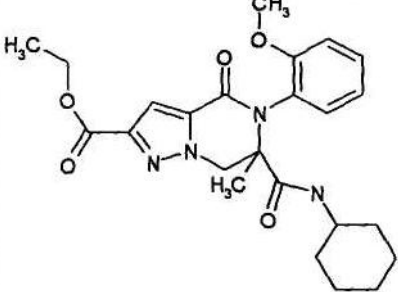
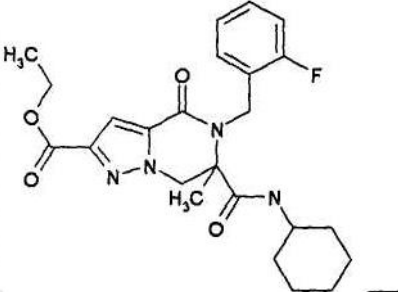
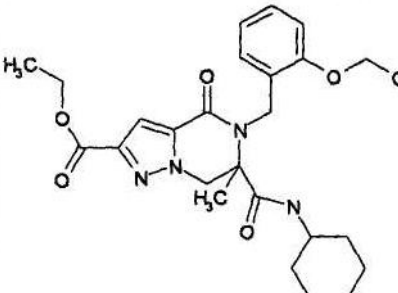
| | | | |
|-----|---|-----------|-----|
| 320 |  | 452,55819 | 453 |
| 321 |  | 470,5951 | 471 |
| 322 |  | 468,51396 | 469 |
| 323 |  | 452,55819 | 453 |
| 324 |  | 444,55686 | 445 |
| 325 |  | 488,97553 | 489 |

Таблица 1.05(5)

| | | | |
|-----|---|-----------|-----|
| 326 |  | 434,54008 | 435 |
| 327 |  | 456,52153 | 457 |
| 328 |  | 454,5305 | 455 |
| 329 |  | 456,52153 | 457 |
| 330 |  | 482,58468 | 483 |

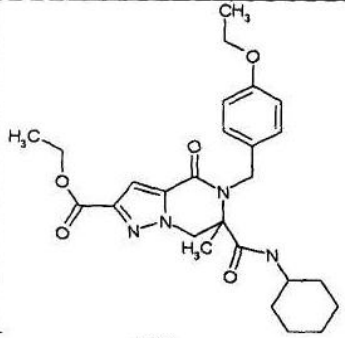
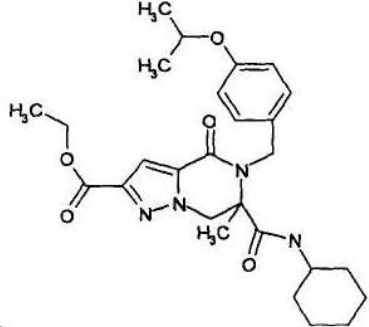
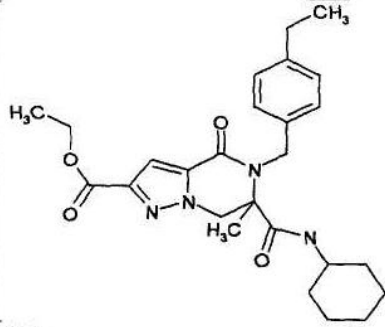
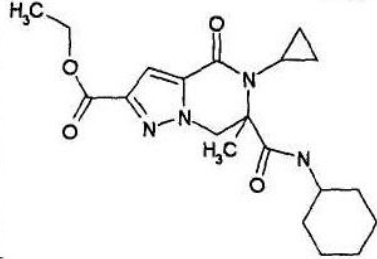
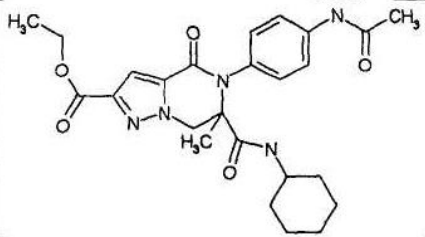
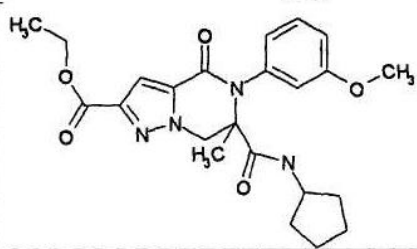
| | | | |
|-----|---|-----------|-----|
| 331 |  | 482,58468 | 483 |
| 332 |  | 496,61177 | 497 |
| 333 |  | 466,58528 | 467 |
| 334 |  | 388,47056 | 389 |
| 335 |  | 481,55632 | 482 |
| 336 |  | 440,50341 | 441 |

Таблица 1.05(5)

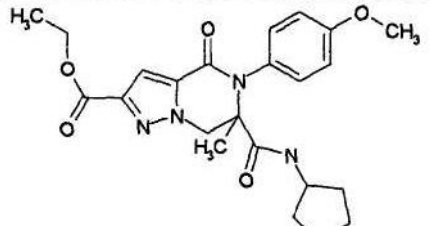
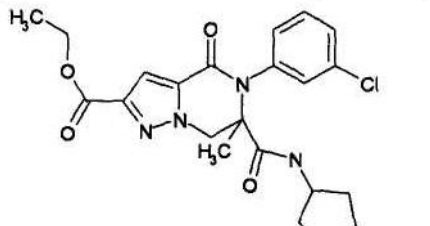
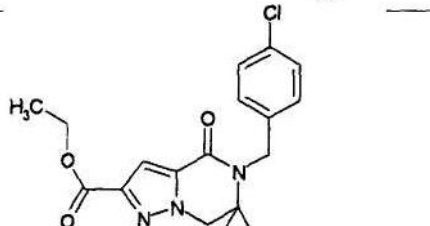
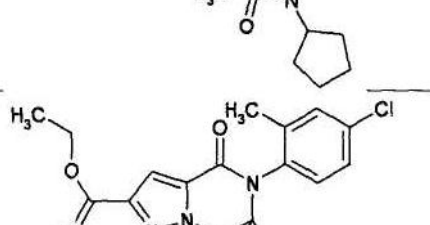
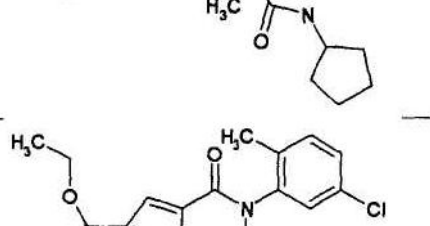
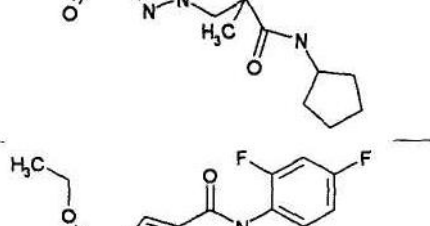
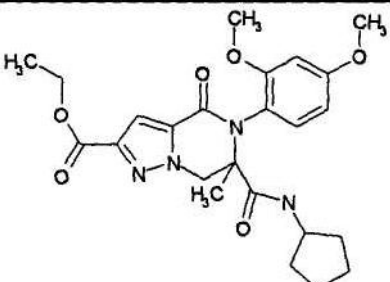
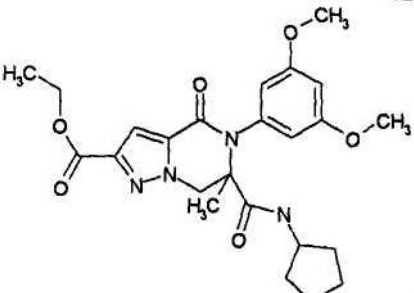
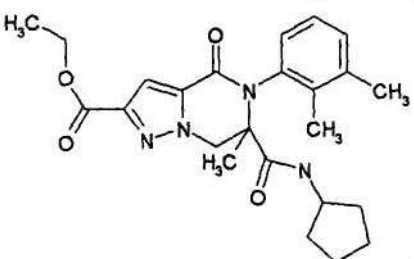
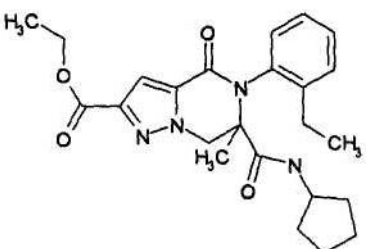
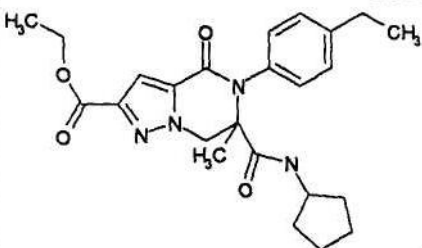
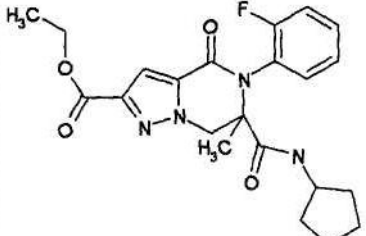
| | | | |
|-----|---|-----------|-----|
| 337 |  | 440,50341 | 441 |
| 338 |  | 444,92195 | 445 |
| 339 |  | 458,94904 | 459 |
| 340 |  | 458,94904 | 459 |
| 341 |  | 458,94904 | 459 |
| 342 |  | 446,45778 | 447 |

Таблица 1.05(5)

| | | | |
|-----|---|-----------|-----|
| 343 |  | 470,5299 | 471 |
| 344 |  | 470,5299 | 471 |
| 345 |  | 438,5311 | 439 |
| 346 |  | 438,5311 | 439 |
| 347 |  | 438,5311 | 439 |
| 348 |  | 428,46735 | 429 |

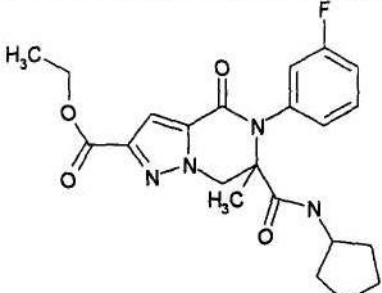
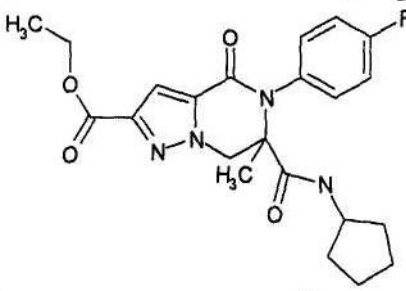
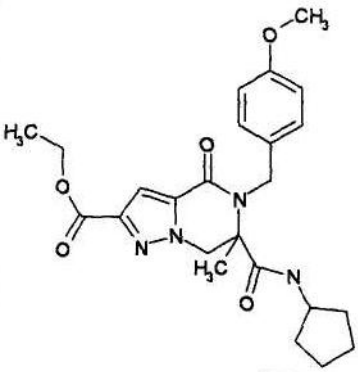
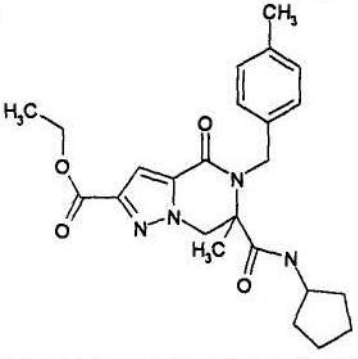
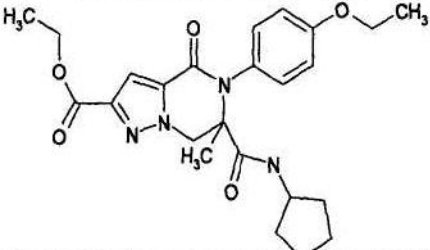
| | | | |
|-----|---|-----------|-----|
| 349 |  | 428,46735 | 429 |
| 350 |  | 428,46735 | 429 |
| 351 |  | 454,5305 | 455 |
| 352 |  | 438,5311 | 439 |
| 353 |  | 454,5305 | 455 |

Таблица 1.05(5)

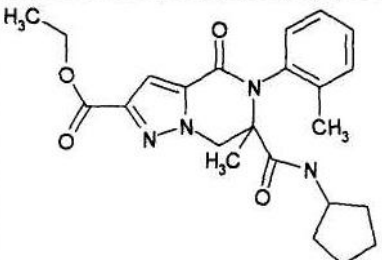
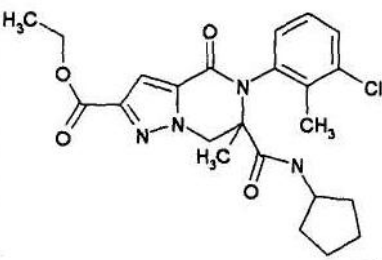
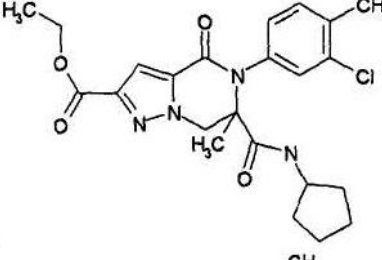
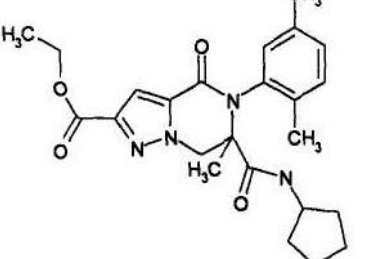
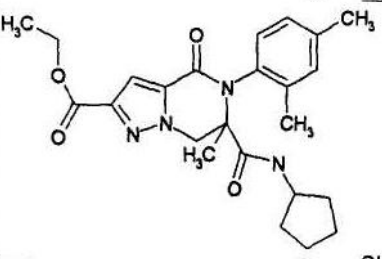
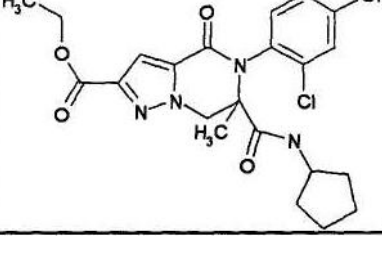
| | | | |
|-----|---|-----------|-----|
| 354 |  | 424,50401 | 425 |
| 355 |  | 458,94904 | 459 |
| 356 |  | 458,94904 | 459 |
| 357 |  | 438,5311 | 439 |
| 358 |  | 438,5311 | 439 |
| 359 |  | 458,94904 | 459 |

Таблица 1.05(5)

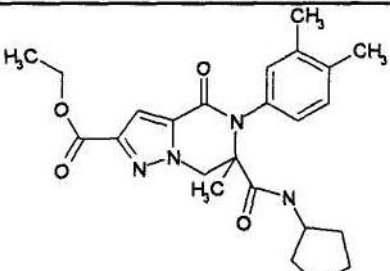
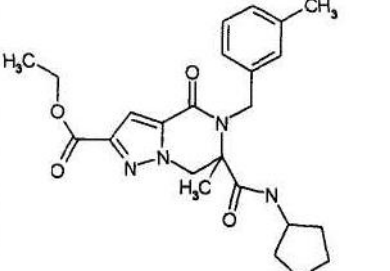
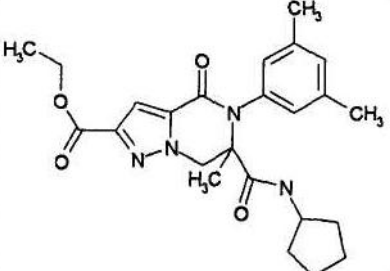
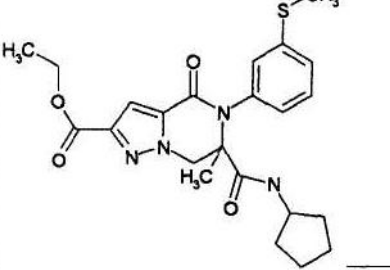
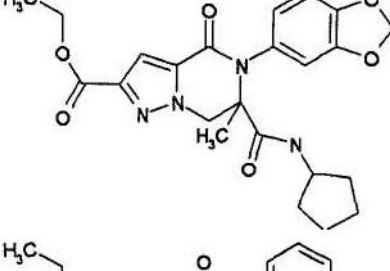
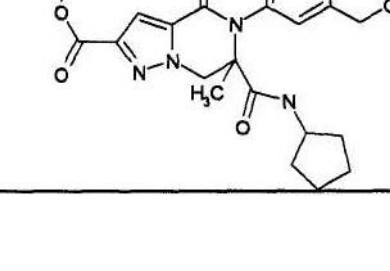
| | | | |
|-----|---|-----------|-----|
| 360 |  | 438,5311 | 439 |
| 361 |  | 438,5311 | 439 |
| 362 |  | 438,5311 | 439 |
| 363 |  | 456,56801 | 457 |
| 364 |  | 454,48687 | 455 |
| 365 |  | 438,5311 | 439 |

Таблица 1.05(5)

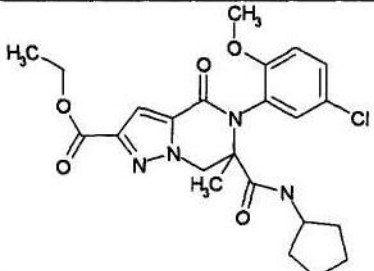
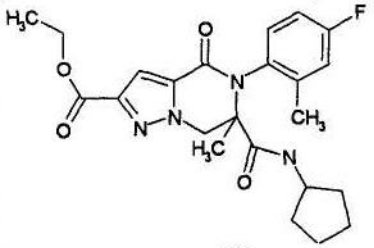
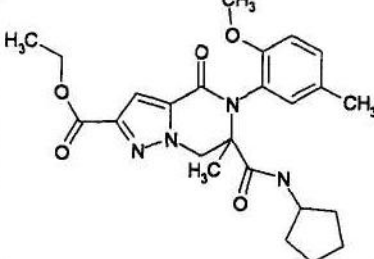
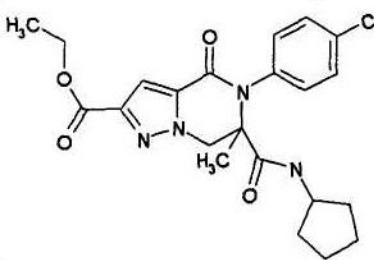
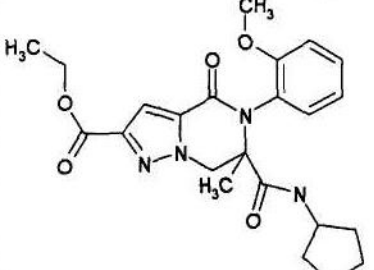
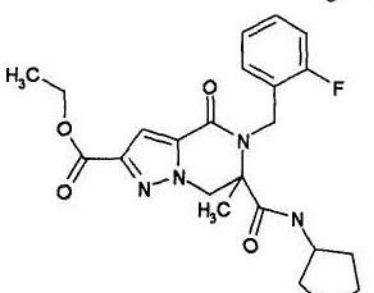
| | | | |
|-----|---|-----------|-----|
| 366 |  | 474,94844 | 475 |
| 367 |  | 442,49444 | 443 |
| 368 |  | 454,5305 | 455 |
| 369 |  | 424,50401 | 425 |
| 370 |  | 440,50341 | 441 |
| 371 |  | 442,49444 | 443 |

Таблица 1.05(5)

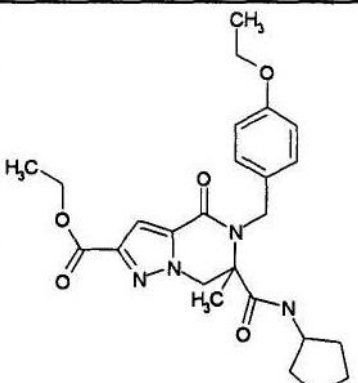
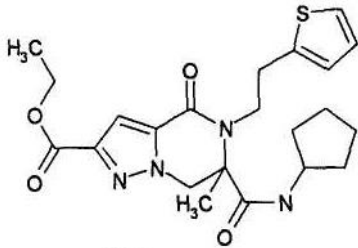
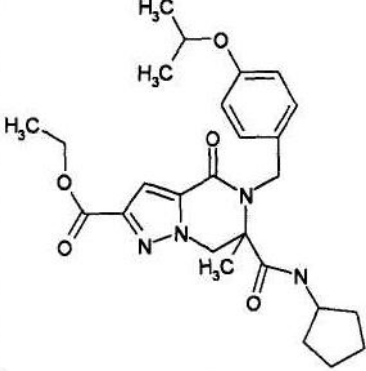
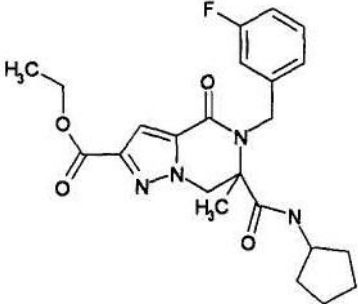
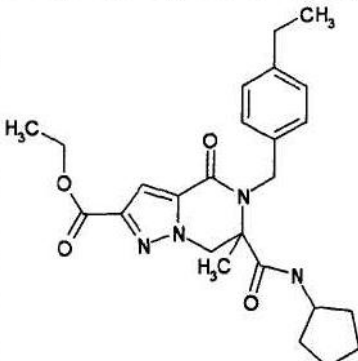
| | | | |
|-----|---|-----------|-----|
| 372 |  | 468,55759 | 469 |
| 373 |  | 444,55686 | 445 |
| 374 |  | 482,58468 | 483 |
| 375 |  | 442,49444 | 443 |
| 376 |  | 452,55819 | 453 |

Таблица 1.05(5)


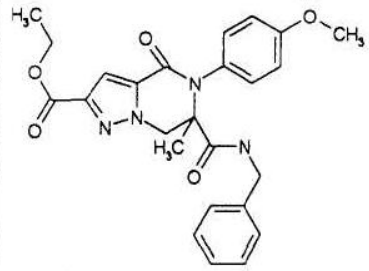
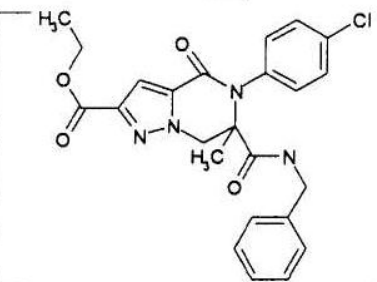

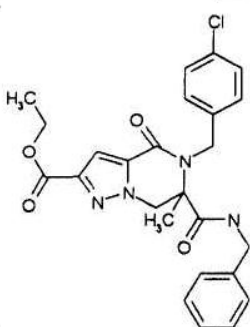
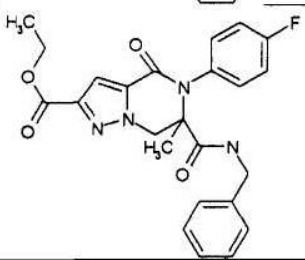
| | | | |
|-----|---|-----------|-----|
| 377 |  | 467,52923 | 468 |
| 378 |  | 462,50977 | 463 |
| 379 |  | 466,92831 | 467 |
| 380 |  | 480,9554 | 481 |
| 381 |  | 480,9554 | 481 |
| 382 |  | 450,47371 | 451 |

Таблица 1.05(5)

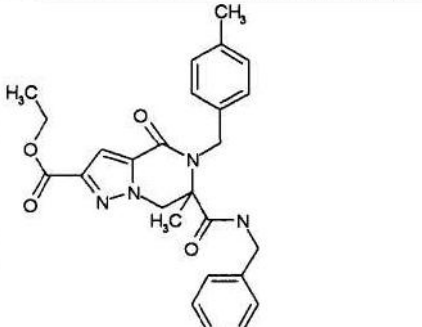
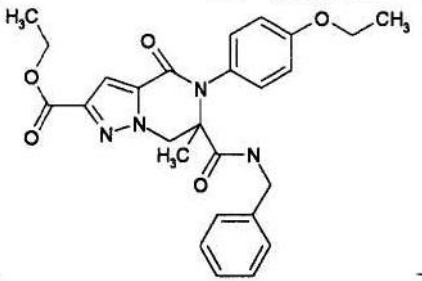
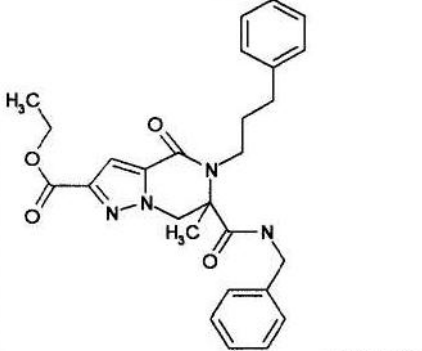
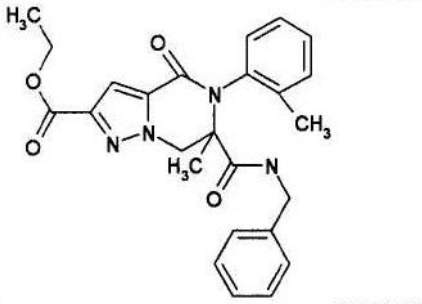
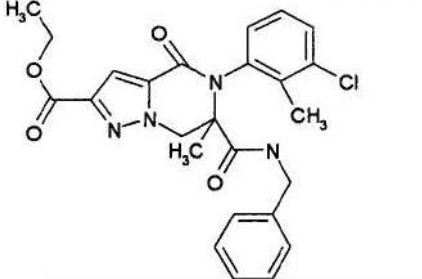
| | | | |
|-----|---|-----------|-----|
| 383 |  | 460,53746 | 461 |
| 384 |  | 476,53686 | 477 |
| 385 |  | 474,56455 | 475 |
| 386 |  | 446,51037 | 447 |
| 387 |  | 480,9554 | 481 |

Таблица 1.05(5)

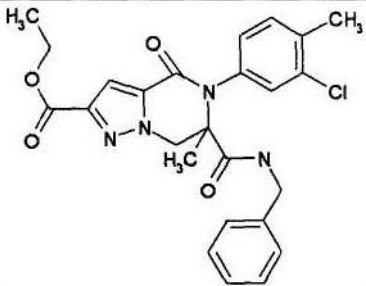
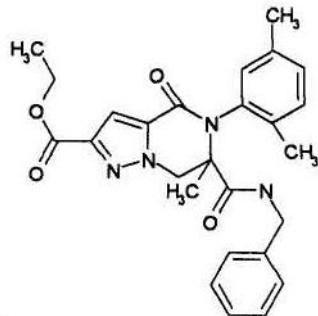
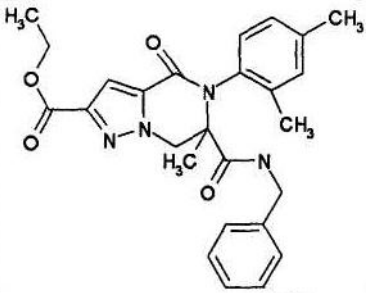
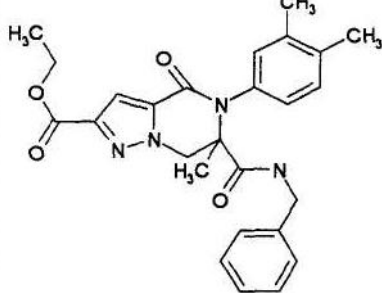
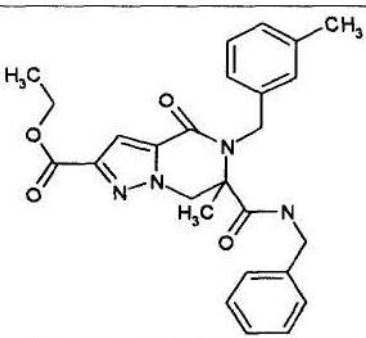
| | | | |
|-----|---|-----------|-----|
| 388 |  | 480,9554 | 481 |
| 389 |  | 460,53746 | 461 |
| 390 |  | 460,53746 | 461 |
| 391 |  | 460,53746 | 461 |
| 392 |  | 460,53746 | 461 |

Таблица 1.05(5)

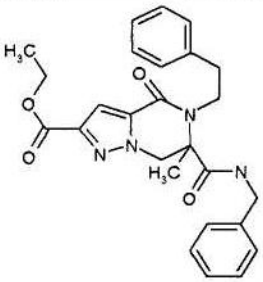
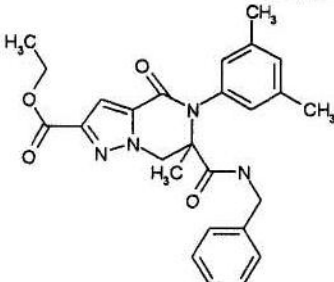
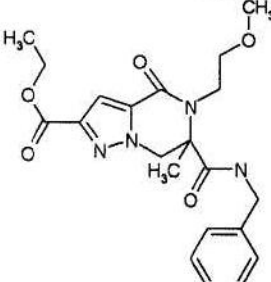
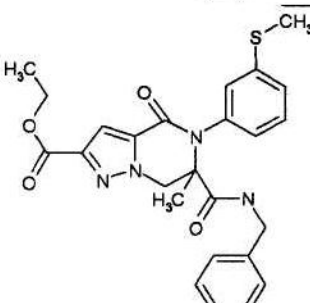
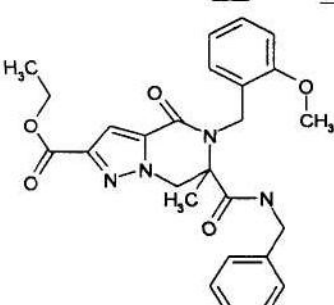
| | | | |
|-----|---|-----------|-----|
| 393 |  | 460,53746 | 461 |
| 394 |  | 460,53746 | 461 |
| 395 |  | 414,46517 | 415 |
| 396 |  | 478,57437 | 479 |
| 397 |  | 476,53686 | 477 |

Таблица 1.05(5)

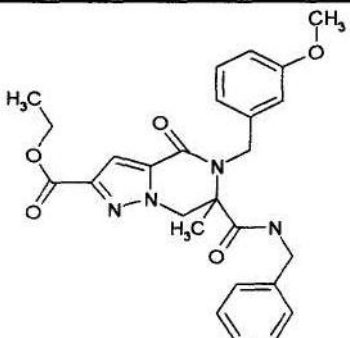
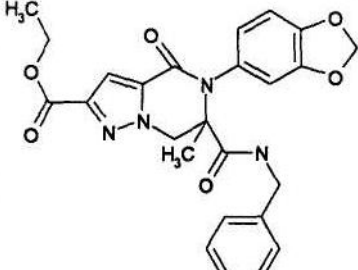
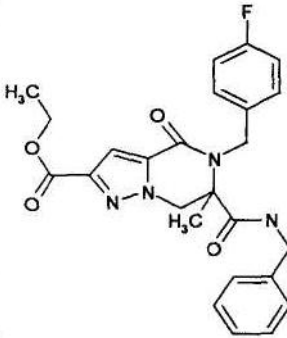
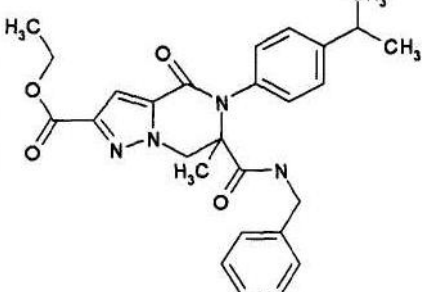
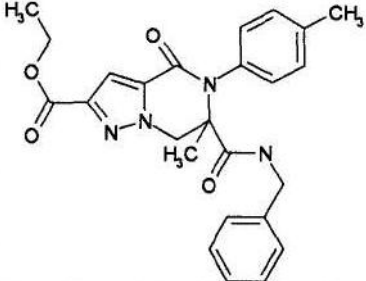
| | | | |
|-----|---|-----------|-----|
| 398 |  | 476,53686 | 477 |
| 399 |  | 476,49323 | 477 |
| 400 |  | 464,5008 | 465 |
| 401 |  | 474,56455 | 475 |
| 402 |  | 446,51037 | 447 |

Таблица 1.05(5)

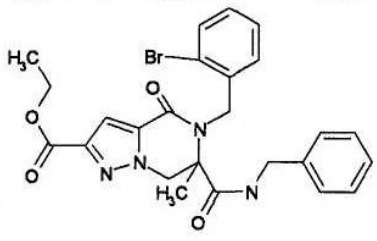
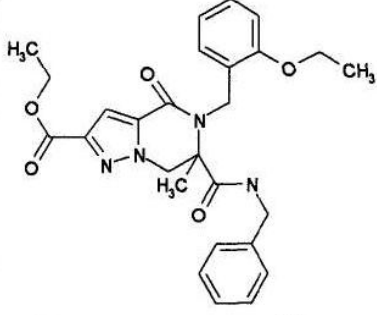
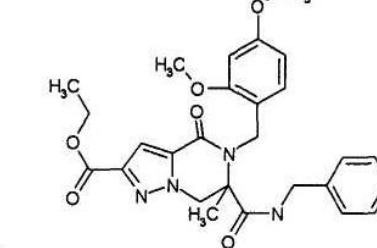
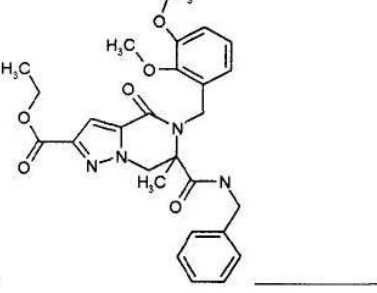
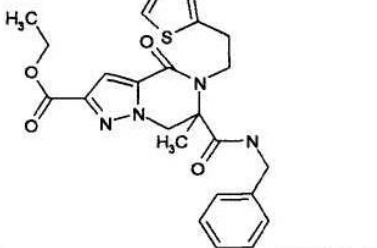
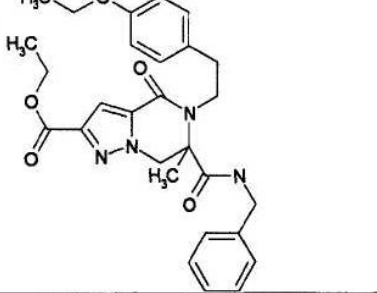
| | | | |
|-----|---|-----------|-----|
| 403 |  | 525,4064 | 526 |
| 404 |  | 490,56395 | 491 |
| 405 |  | 506,56335 | 507 |
| 406 |  | 506,56335 | 507 |
| 407 |  | 466,56322 | 467 |
| 408 |  | 504,59104 | 505 |

Таблица 1.05(5)

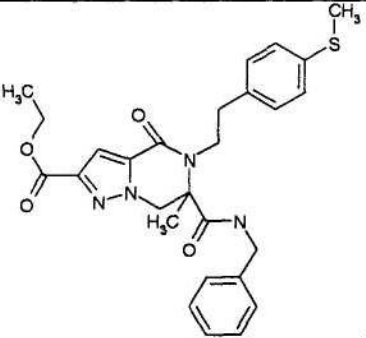
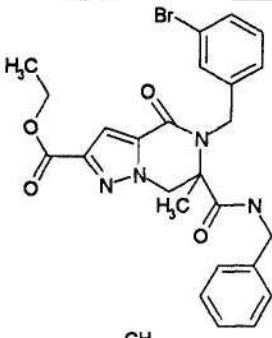
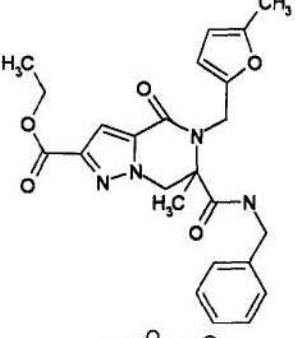
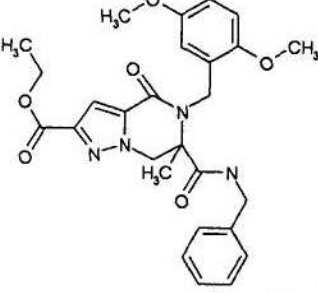

| | | | |
|-----|---|-----------|-----|
| 409 |  | 506,62855 | 507 |
| 410 |  | 525,4064 | 526 |
| 411 |  | 450,49862 | 451 |
| 412 |  | 506,56335 | 507 |
| 413 |  | 490,56395 | 491 |

Таблица 1.05(5)

| | | | |
|-----|--|-----------|-----|
| 414 | | 470,57353 | 471 |
| 415 | | 474,53687 | 475 |
| 416 | | 474,51815 | 475 |
| 417 | | 444,49166 | 445 |
| 418 | | 448,9102 | 449 |

Таблица 1.05(5)

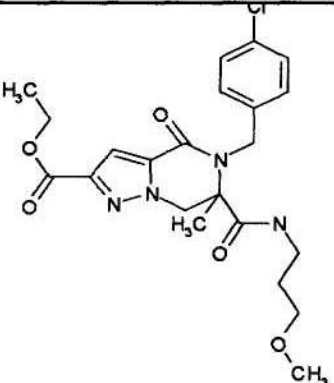
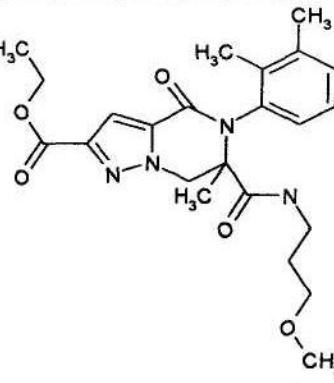
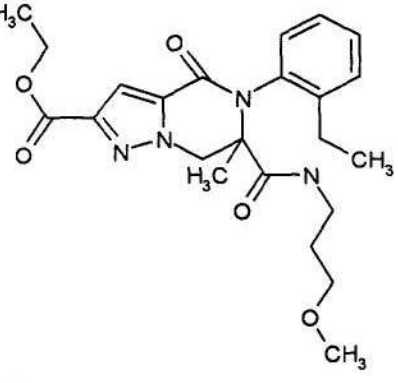
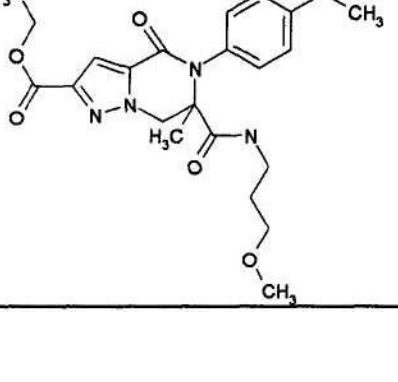
| | | | |
|-----|---|-----------|-----|
| 419 |  | 462,93729 | 463 |
| 420 |  | 442,51935 | 443 |
| 421 |  | 442,51935 | 443 |
| 422 |  | 442,51935 | 443 |

Таблица 1.05(5)

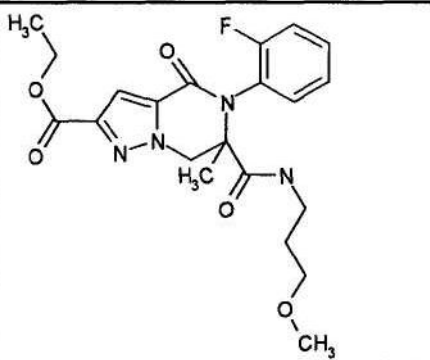
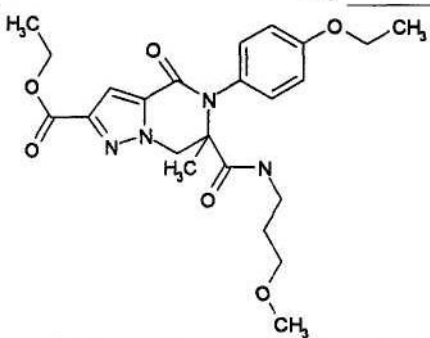
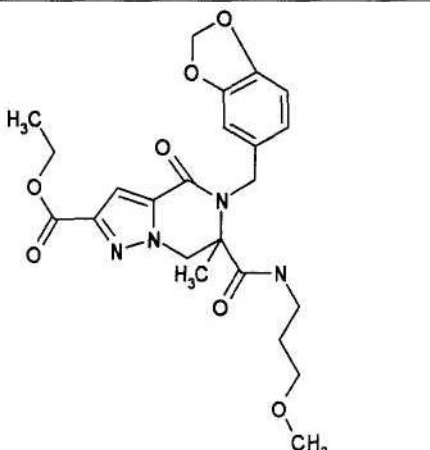
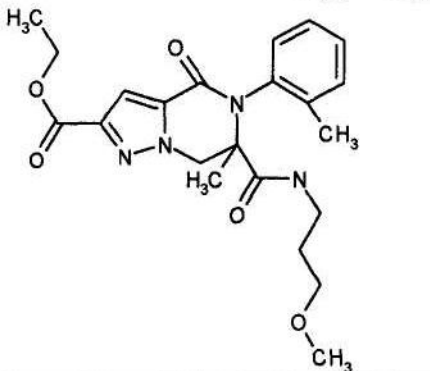
| | | | |
|-----|---|-----------|-----|
| 423 |  | 432,4556 | 433 |
| 424 |  | 458,51875 | 459 |
| 425 |  | 472,50221 | 473 |
| 426 |  | 428,49226 | 429 |

Таблица 1.05(5)

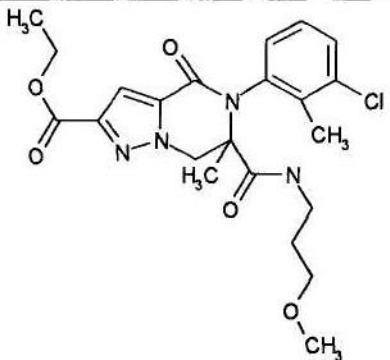
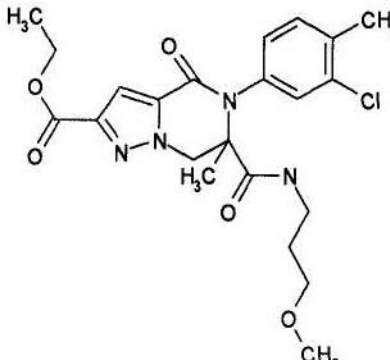
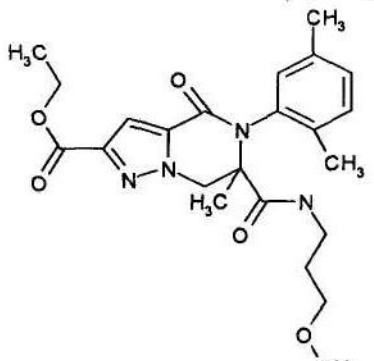
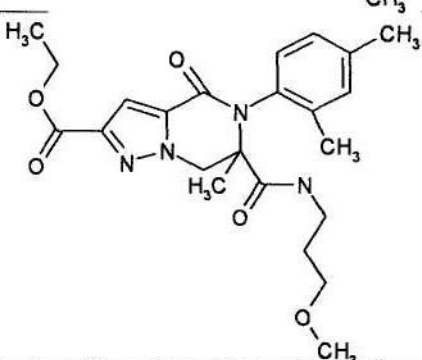
| | | | |
|-----|---|-----------|-----|
| 427 |  | 462,93729 | 463 |
| 428 |  | 462,93729 | 463 |
| 429 |  | 442,51935 | 443 |
| 430 |  | 442,51935 | 443 |

Таблица 1.05(5)

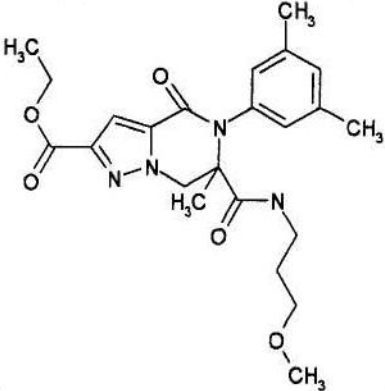
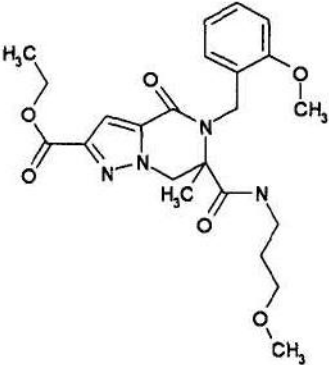
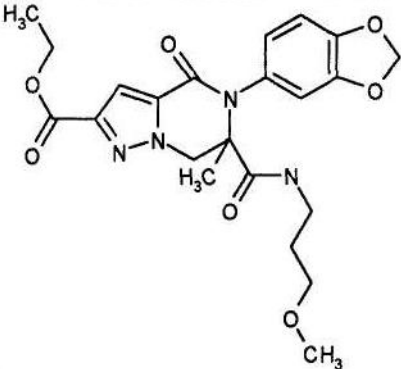
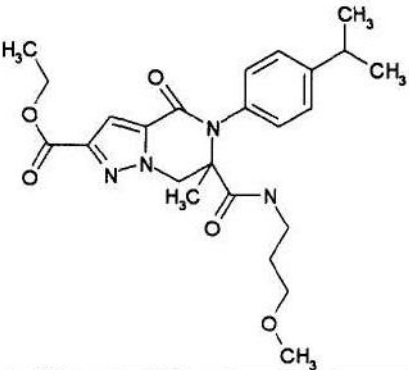
| | | | |
|-----|---|-----------|-----|
| 431 |  | 442,51935 | 443 |
| 432 |  | 458,51875 | 459 |
| 433 |  | 458,47512 | 459 |
| 434 |  | 456,54644 | 457 |

Таблица 1.05(5)

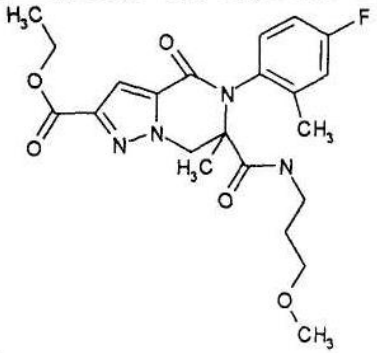
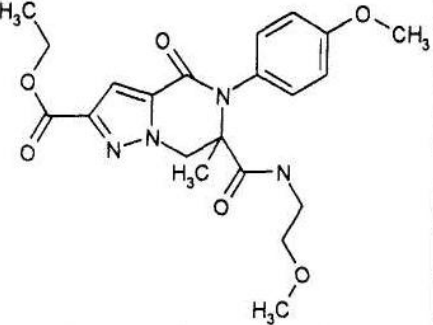
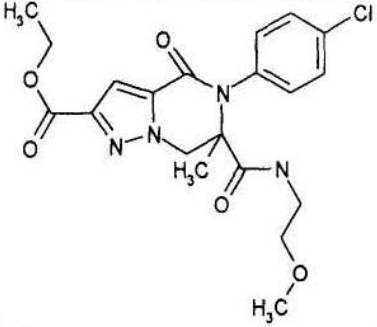
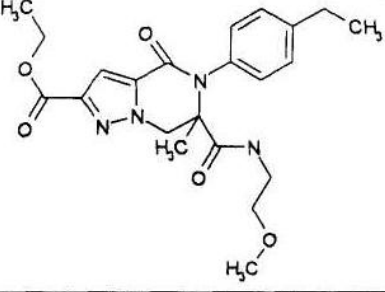
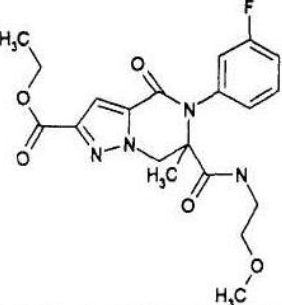
| | | | |
|-----|---|-----------|-----|
| 435 |  | 446,48269 | 447 |
| 436 |  | 430,46457 | 431 |
| 437 |  | 434,88311 | 435 |
| 438 |  | 428,49226 | 429 |
| 439 |  | 418,42851 | 419 |

Таблица 1.05(5)

| | | | |
|-----|--|-----------|-----|
| 440 | | 418,42851 | 419 |
| 441 | | 444,49166 | 445 |
| 442 | | 414,46517 | 415 |
| 443 | | 428,49226 | 429 |
| 444 | | 428,49226 | 429 |

Таблица 1.05(5)

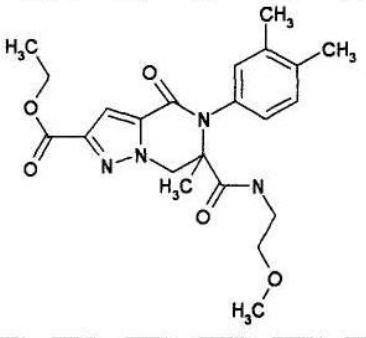
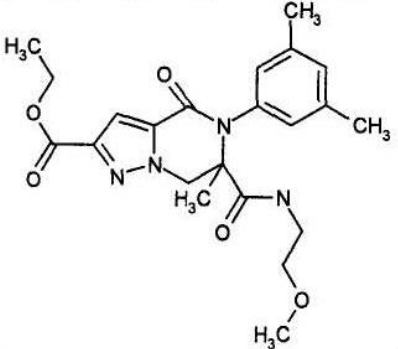
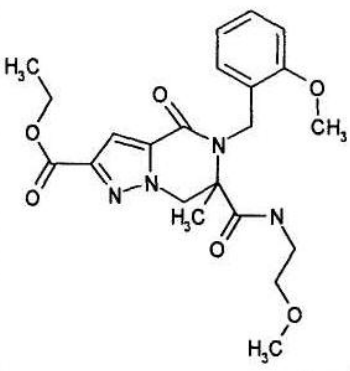
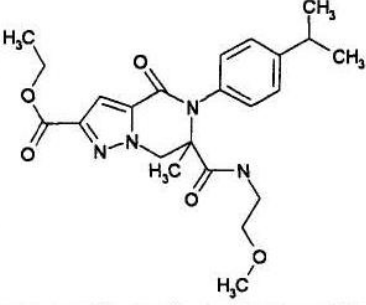
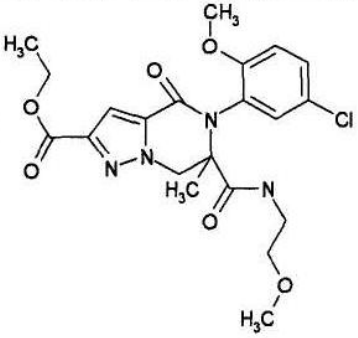
| | | | |
|-----|---|-----------|-----|
| 445 |  | 428,49226 | 429 |
| 446 |  | 428,49226 | 429 |
| 447 |  | 444,49166 | 445 |
| 448 |  | 442,51935 | 443 |
| 449 |  | 464,9096 | 465 |

Таблица 1.05(5)

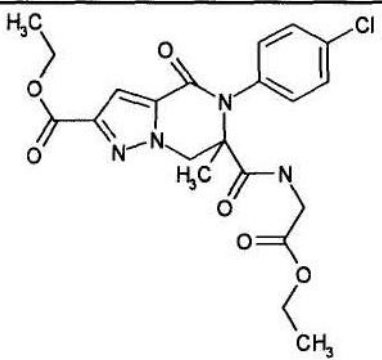
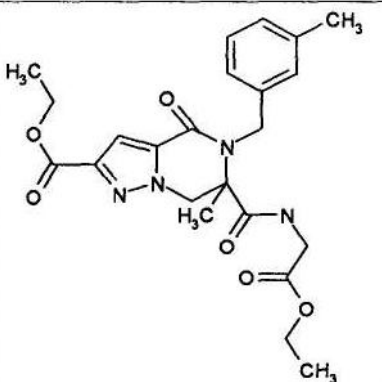
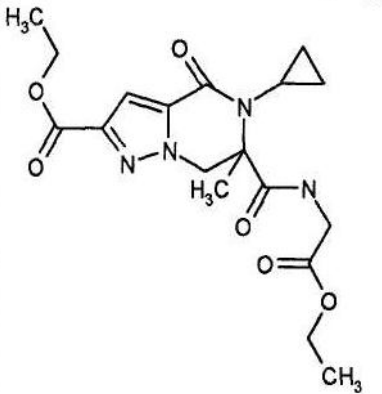
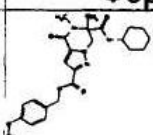
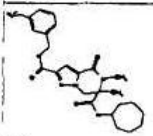
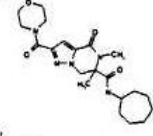
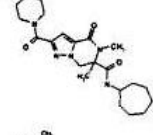
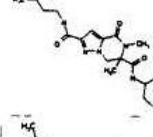
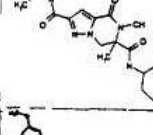
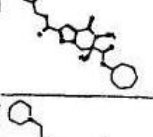
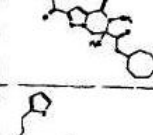
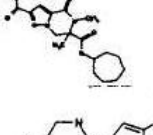
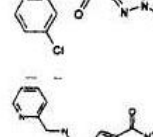
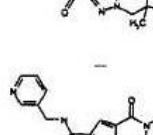
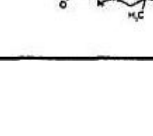
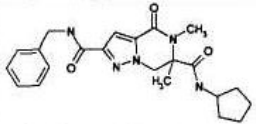
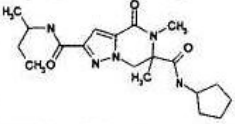
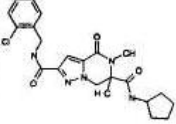
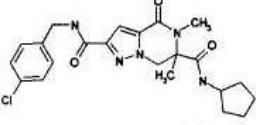
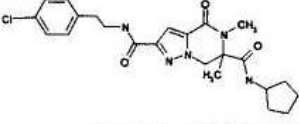
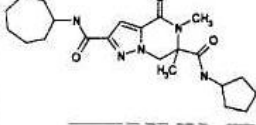
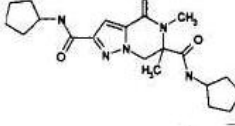
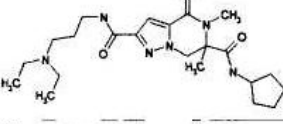
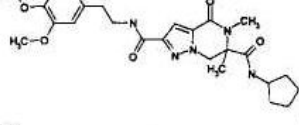
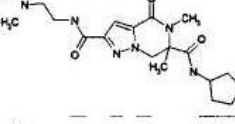
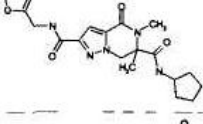
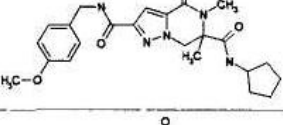
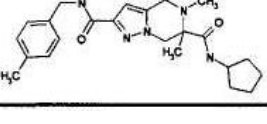
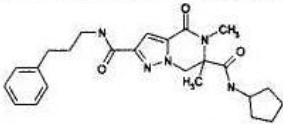
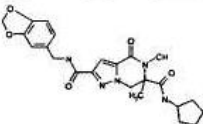
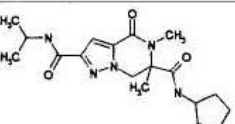
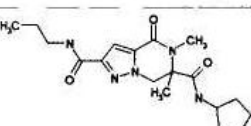
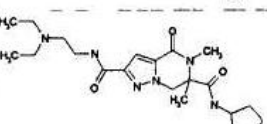
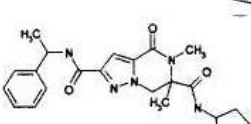
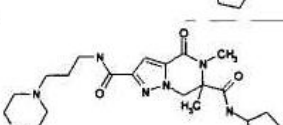
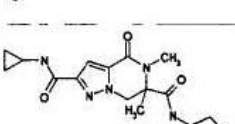
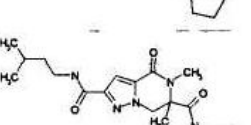
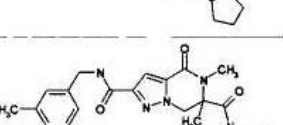
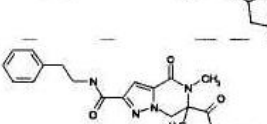
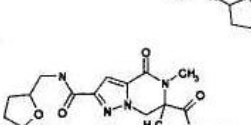
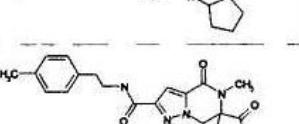
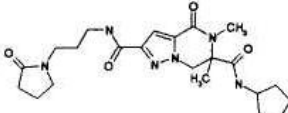
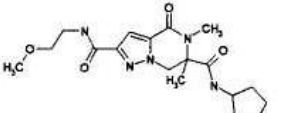
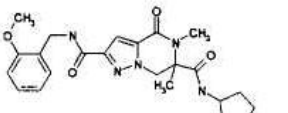
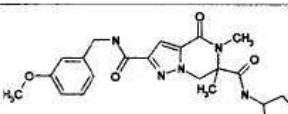
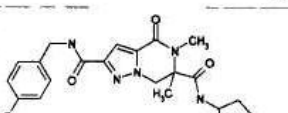
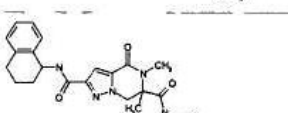
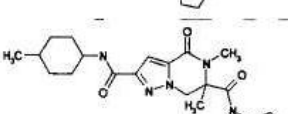
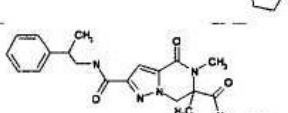
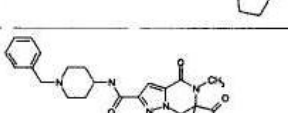
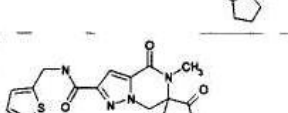
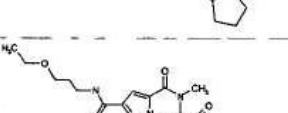
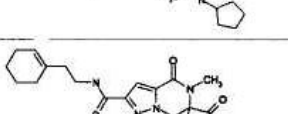
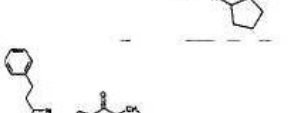
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| 451 |  | 456,50281 | 457 |
| 452 |  | 392,41518 | 393 |

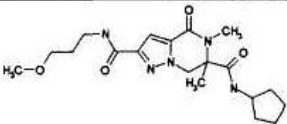
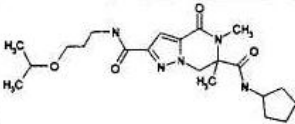
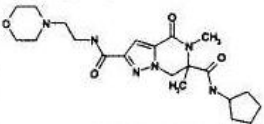
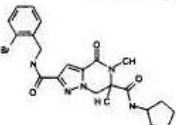
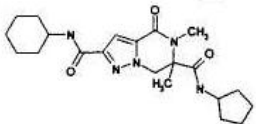
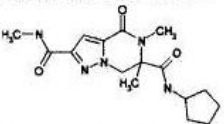
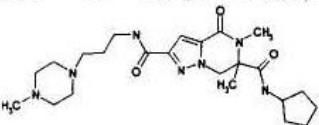
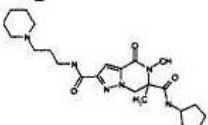
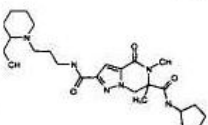
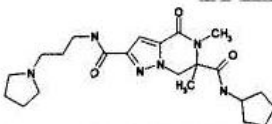
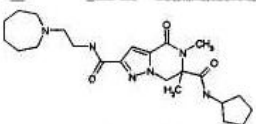
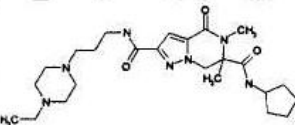
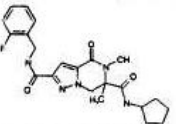
Таблица 1.05(6)

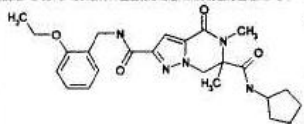
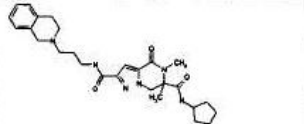
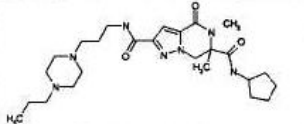
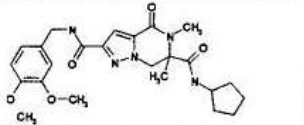
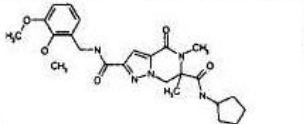
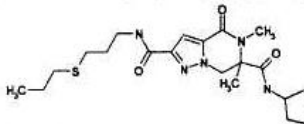
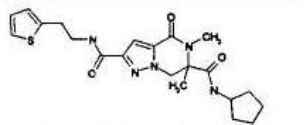
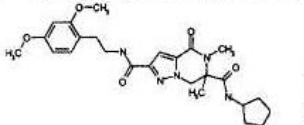
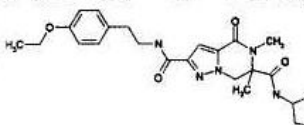
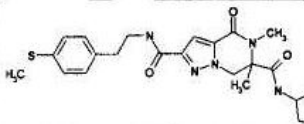
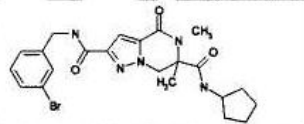
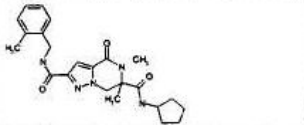
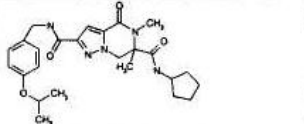
| № п.п. | Формула | Мол. масса | Мас-спектр, m/z (M+1) |
|--------|---|------------|-------------------------|
| 1 |  | 453,54577 | 454 |
| 2 |  | 451,57346 | 452 |
| 3 |  | 417,51232 | 418 |
| 4 |  | 415,54001 | 416 |
| 5 |  | 417,55595 | 418 |
| 6 |  | 389,50177 | 390 |
| 7 |  | 467,57286 | 468 |
| 8 |  | 458,60886 | 459 |
| 9 |  | 457,59922 | 458 |
| 10 |  | 443,93722 | 444 |
| 11 |  | 410,47977 | 411 |
| 12 |  | 410,47977 | 411 |

| | | | |
|----|---|-----------|-----|
| 13 |  | 409,49219 | 410 |
| 14 |  | 375,47468 | 376 |
| 15 |  | 443,93722 | 444 |
| 16 |  | 443,93722 | 444 |
| 17 |  | 457,96431 | 458 |
| 18 |  | 415,54001 | 416 |
| 19 |  | 387,48583 | 388 |
| 20 |  | 432,57062 | 433 |
| 21 |  | 483,57226 | 484 |
| 22 |  | 390,48935 | 391 |
| 23 |  | 399,45335 | 400 |
| 24 |  | 439,51868 | 440 |
| 25 |  | 423,51928 | 424 |

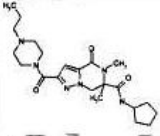
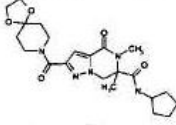
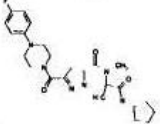
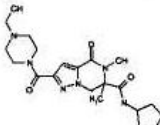
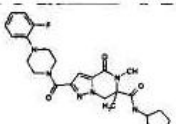
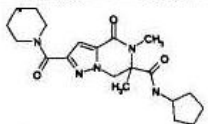
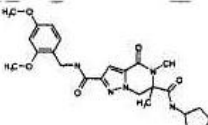
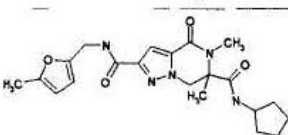
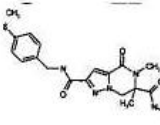
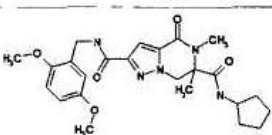
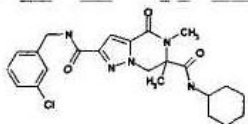
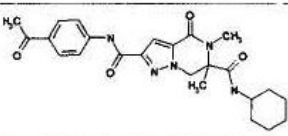
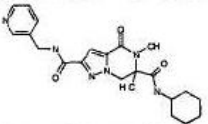
| | | | |
|----|---|-----------|-----|
| 26 |  | 437,54637 | 438 |
| 27 |  | 453,50214 | 454 |
| 28 |  | 361,44759 | 362 |
| 29 |  | 361,44759 | 362 |
| 30 |  | 418,54353 | 419 |
| 31 |  | 423,51928 | 424 |
| 32 |  | 446,55408 | 447 |
| 33 |  | 359,43165 | 360 |
| 34 |  | 389,50177 | 390 |
| 35 |  | 423,51928 | 424 |
| 36 |  | 423,51928 | 424 |
| 37 |  | 403,48523 | 404 |
| 38 |  | 437,54637 | 438 |

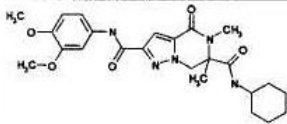
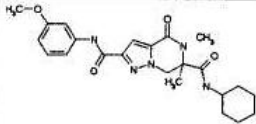
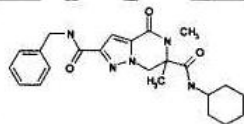
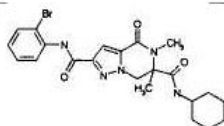
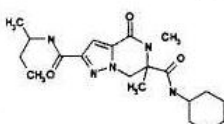
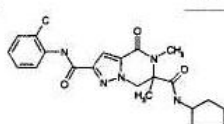
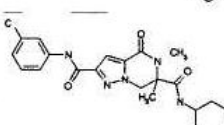
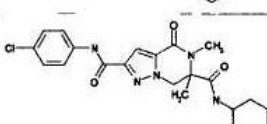
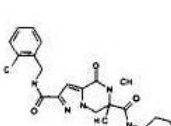
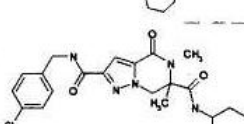
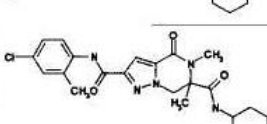
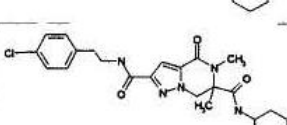
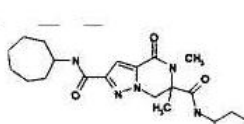
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| 43 |  | 427,48262 | 428 |
| 44 |  | 449,55752 | 450 |
| 45 |  | 415,54001 | 416 |
| 46 |  | 437,54637 | 438 |
| 47 |  | 492,62637 | 493 |
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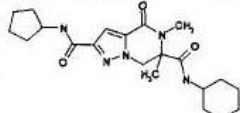
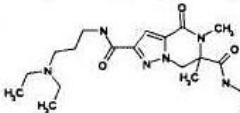
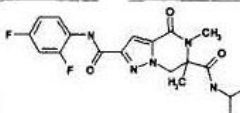
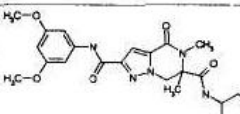
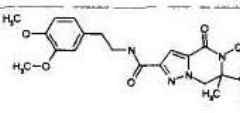
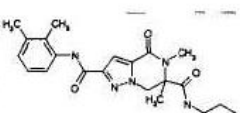
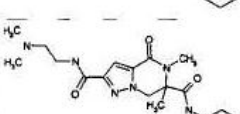
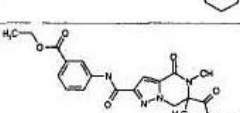
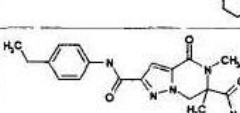
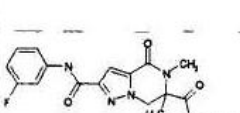
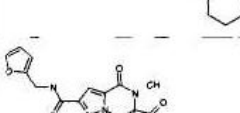
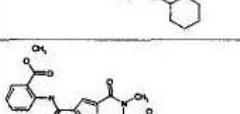
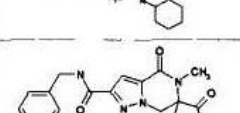
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| 56 |  | 401,51292 | 402 |
| 57 |  | 333,39341 | 334 |
| 58 |  | 459,59644 | 460 |
| 59 |  | 444,58177 | 445 |
| 60 |  | 472,63595 | 473 |
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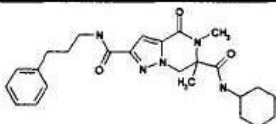
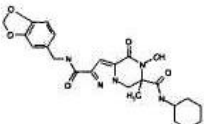
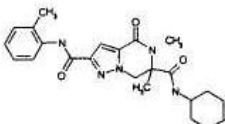
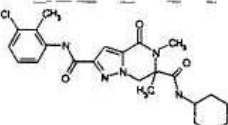
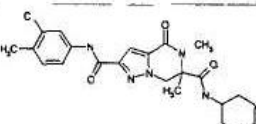
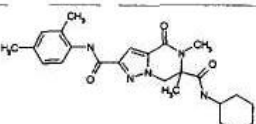
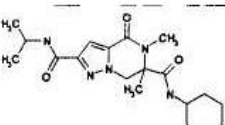
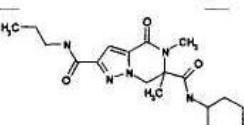
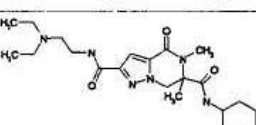
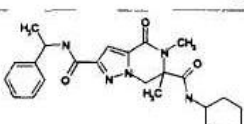
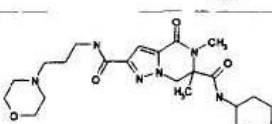
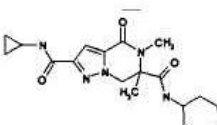
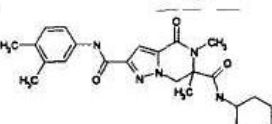
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| 66 |  | 492,62637 | 493 |
| 67 |  | 487,65062 | 488 |
| 68 |  | 469,54517 | 470 |
| 69 |  | 469,54517 | 470 |
| 70 |  | 435,59286 | 436 |
| 71 |  | 429,54504 | 430 |
| 72 |  | 483,57226 | 484 |
| 73 |  | 467,57286 | 468 |
| 74 |  | 469,61037 | 470 |
| 75 |  | 488,38822 | 489 |
| 76 |  | 423,51928 | 424 |
| 77 |  | 467,57286 | 468 |

| | | | |
|----|--|-----------|-----|
| 78 | | 427,48262 | 428 |
| 79 | | 481,55632 | 482 |
| 80 | | 437,54637 | 438 |
| 81 | | 459,54996 | 460 |
| 82 | | 401,51292 | 402 |
| 83 | | 430,51105 | 431 |
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| 85 | | 464,57219 | 465 |
| 86 | | 373,45874 | 374 |
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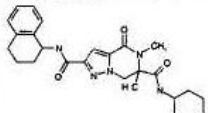
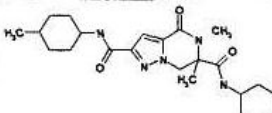
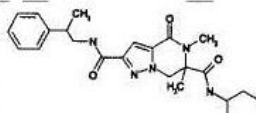
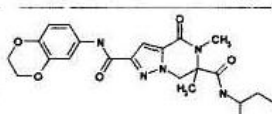
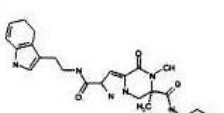
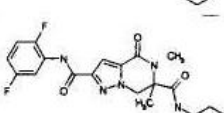
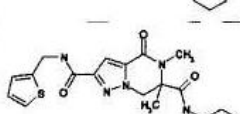
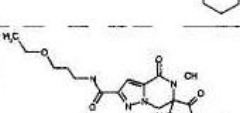
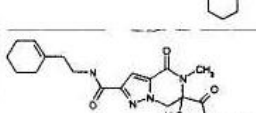
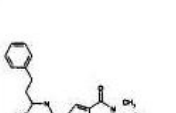
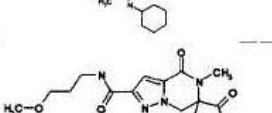
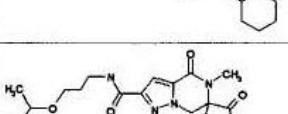
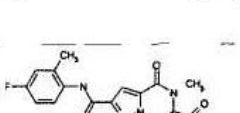
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| 95 |  | 482,56262 | 483 |
| 96 |  | 387,48583 | 388 |
| 97 |  | 469,54517 | 470 |
| 98 |  | 413,48044 | 414 |
| 99 |  | 455,58328 | 456 |
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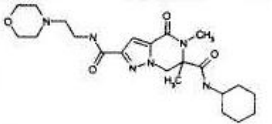
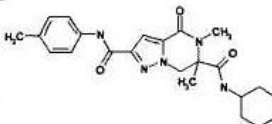
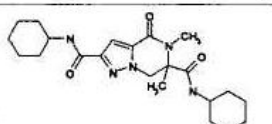
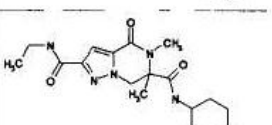
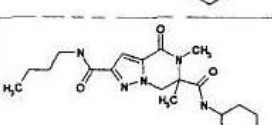
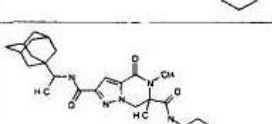
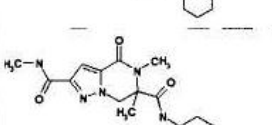
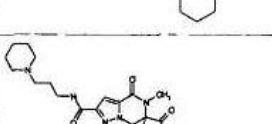
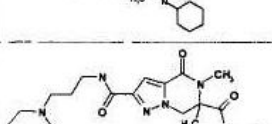
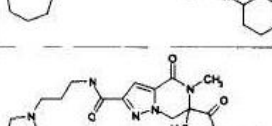
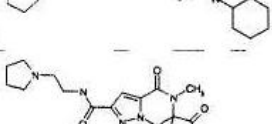
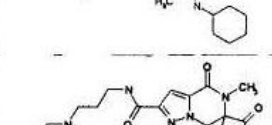
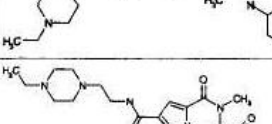
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| 108 |  | 389,50177 | 390 |
| 109 |  | 443,93722 | 444 |
| 110 |  | 443,93722 | 444 |
| 111 |  | 443,93722 | 444 |
| 112 |  | 457,96431 | 458 |
| 113 |  | 457,96431 | 458 |
| 114 |  | 457,96431 | 458 |
| 115 |  | 471,9914 | 472 |
| 116 |  | 429,5671 | 430 |

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| 117 |  | 401,51292 | 402 |
| 118 |  | 446,59771 | 447 |
| 119 |  | 445,47305 | 446 |
| 120 |  | 469,54517 | 470 |
| 121 |  | 497,59935 | 498 |
| 122 |  | 437,54637 | 438 |
| 123 |  | 404,51644 | 405 |
| 124 |  | 481,55632 | 482 |
| 125 |  | 437,54637 | 438 |
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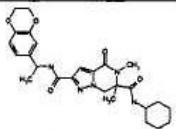
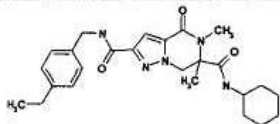
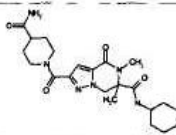
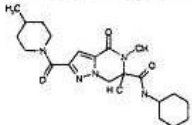
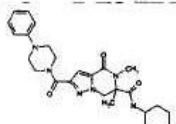
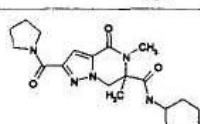
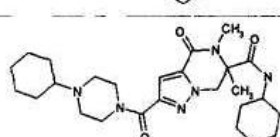
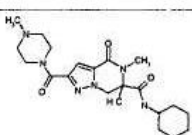
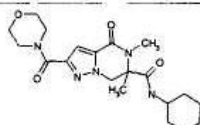
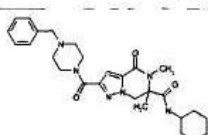
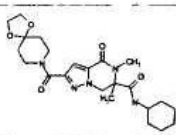
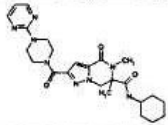
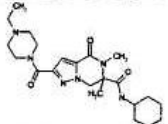
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| 134 |  | 457,96431 | 458 |
| 135 |  | 437,54637 | 438 |
| 136 |  | 375,47468 | 376 |
| 137 |  | 375,47468 | 376 |
| 138 |  | 432,57062 | 433 |
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| 140 |  | 460,58117 | 461 |
| 141 |  | 373,45874 | 374 |
| 142 |  | 437,54637 | 438 |

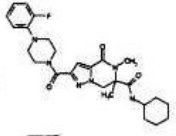
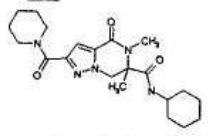
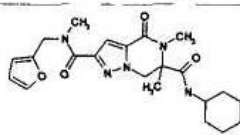
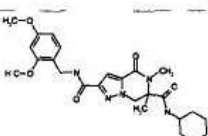
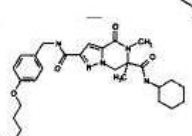
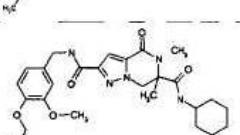
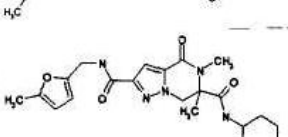
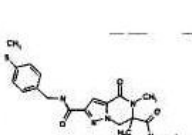
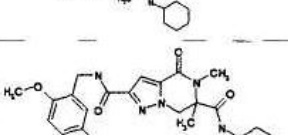
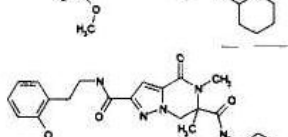
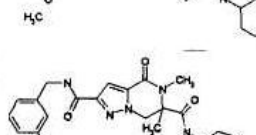
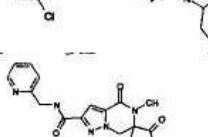
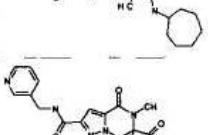
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| 147 | | 458,56523 | 459 |
| 148 | | 437,54637 | 438 |
| 149 | | 391,47408 | 392 |
| 150 | | 455,58328 | 456 |
| 151 | | 453,54577 | 454 |
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| 153 | | 441,50971 | 442 |
| 154 | | 451,57346 | 452 |
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| 157 |  | 429,5671 | 430 |
| 158 |  | 451,57346 | 452 |
| 159 |  | 467,52923 | 468 |
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| 161 |  | 445,47305 | 446 |
| 162 |  | 429,54504 | 430 |
| 163 |  | 419,52826 | 420 |
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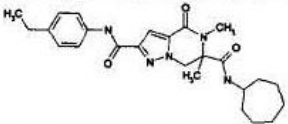
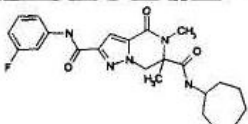
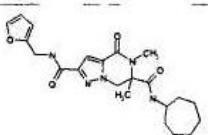
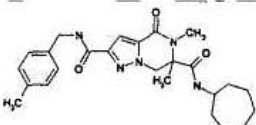
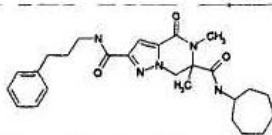
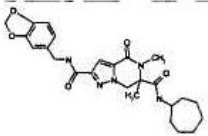
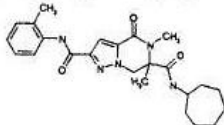
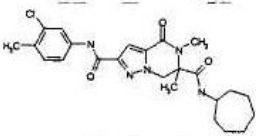
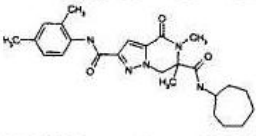
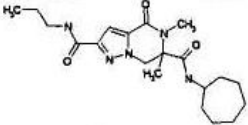
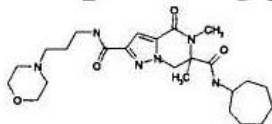
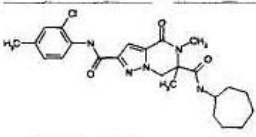
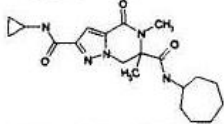
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| 173 |  | 389,50177 | 390 |
| 174 |  | 495,67067 | 496 |
| 175 |  | 347,4205 | 348 |
| 176 |  | 458,60886 | 459 |
| 177 |  | 472,63595 | 473 |
| 178 |  | 444,58177 | 445 |
| 179 |  | 430,55468 | 431 |
| 180 |  | 487,65062 | 488 |
| 181 |  | 473,62353 | 474 |

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| 183 | | 467,57286 | 468 |
| 184 | | 459,59644 | 460 |
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| 186 | | 467,57286 | 468 |
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| 188 | | 443,57213 | 444 |
| 189 | | 497,59935 | 498 |
| 190 | | 481,59995 | 482 |
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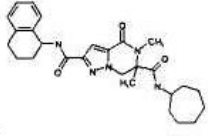
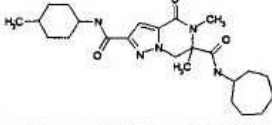
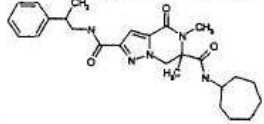
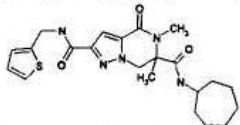
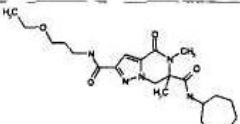
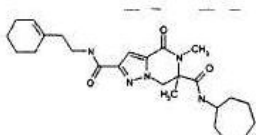
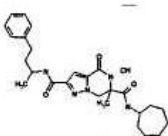
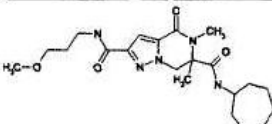
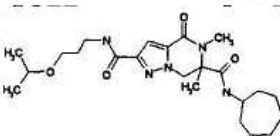
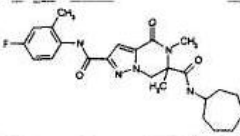
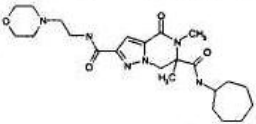
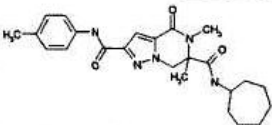
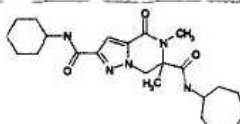
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| 198 |  | 415,54001 | 416 |
| 199 |  | 478,59928 | 479 |
| 200 |  | 387,48583 | 388 |
| 201 |  | 484,6471 | 485 |
| 202 |  | 416,52759 | 417 |
| 203 |  | 403,48523 | 404 |
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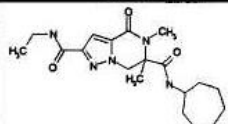
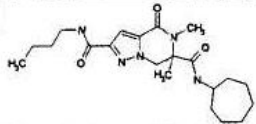
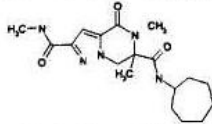
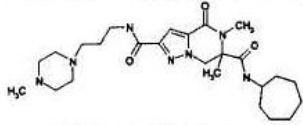
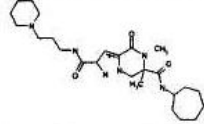
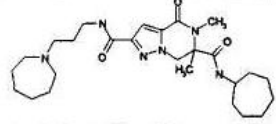
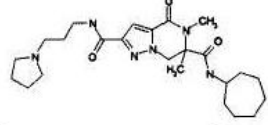
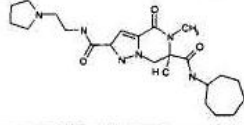
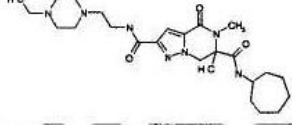
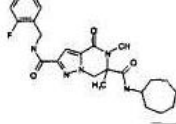
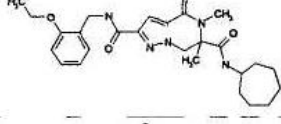
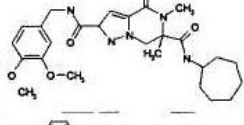
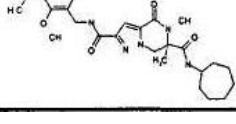
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| 212 |  | 495,62704 | 496 |
| 213 |  | 497,59935 | 498 |
| 214 |  | 427,50753 | 428 |
| 215 |  | 469,61037 | 470 |
| 216 |  | 483,57226 | 484 |
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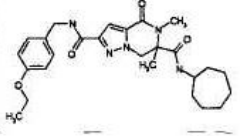
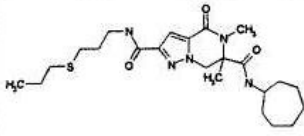
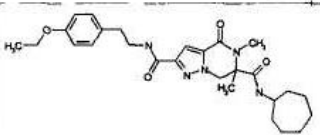
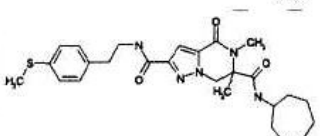
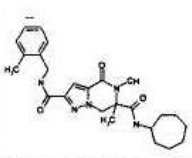
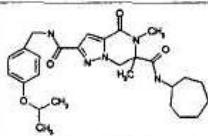
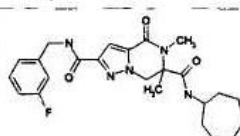
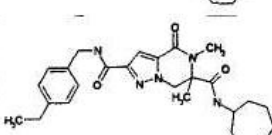
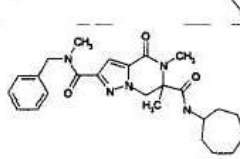
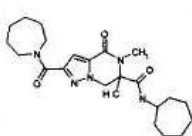
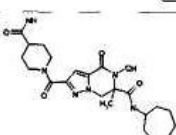
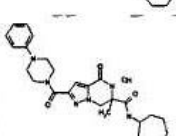
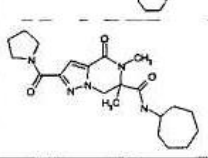
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| 226 | | 471,9914 | 472 |
| 227 | | 486,01849 | 487 |
| 228 | | 443,59419 | 444 |
| 229 | | 415,54001 | 416 |
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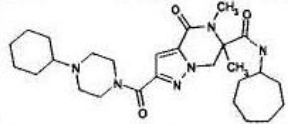
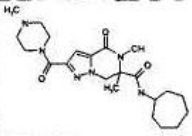
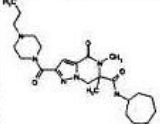
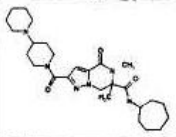
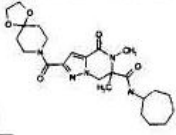

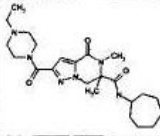
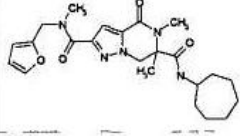
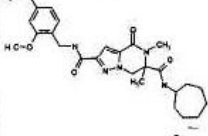
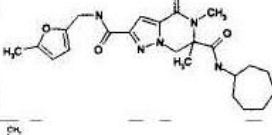
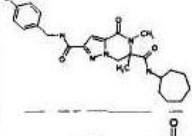
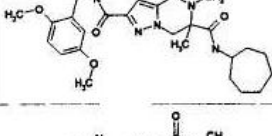
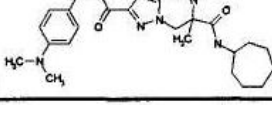
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| 236 |  | 427,50753 | 428 |
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| 238 |  | 465,60055 | 466 |
| 239 |  | 481,55632 | 482 |
| 240 |  | 437,54637 | 438 |
| 241 |  | 471,9914 | 472 |
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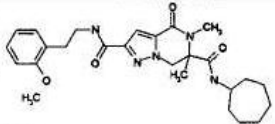
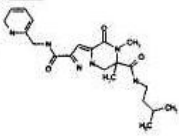
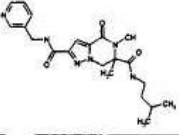
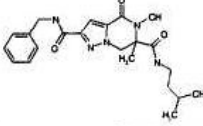
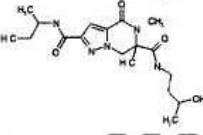
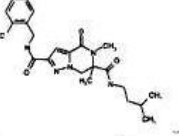
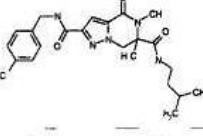
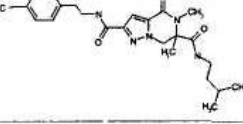
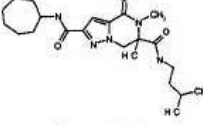
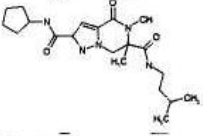
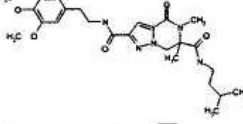
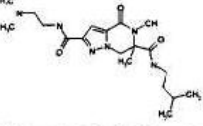
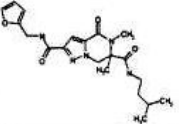
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| 248 | | 451,57346 | 452 |
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| 251 | | 472,59232 | 473 |
| 252 | | 451,57346 | 452 |
| 253 | | 405,50117 | 406 |
| 254 | | 469,61037 | 470 |
| 255 | | 467,57286 | 468 |
| 256 | | 467,57286 | 468 |
| 257 | | 455,5368 | 456 |
| 258 | | 465,60055 | 466 |
| 259 | | 451,57346 | 452 |

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| 261 |  | 443,59419 | 444 |
| 262 |  | 465,60055 | 466 |
| 263 |  | 443,57213 | 444 |
| 264 |  | 433,55535 | 434 |
| 265 |  | 455,60534 | 456 |
| 266 |  | 479,62764 | 480 |
| 267 |  | 419,52826 | 420 |
| 268 |  | 447,58244 | 448 |
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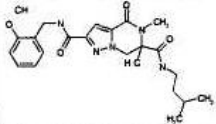
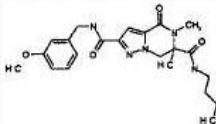
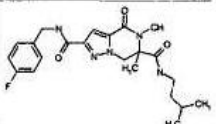
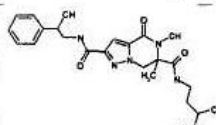
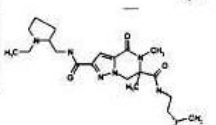
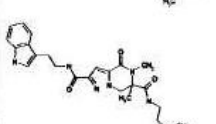
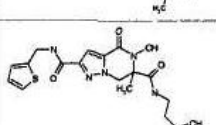
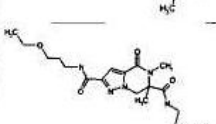
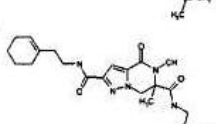
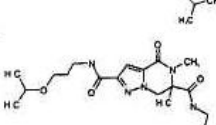
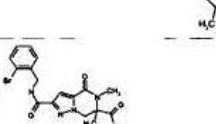
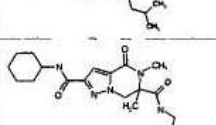
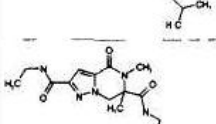
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| 275 |  | 361,44759 | 362 |
| 276 |  | 487,65062 | 488 |
| 277 |  | 472,63595 | 473 |
| 278 |  | 486,66304 | 487 |
| 279 |  | 458,60886 | 459 |
| 280 |  | 444,58177 | 445 |
| 281 |  | 487,65062 | 488 |
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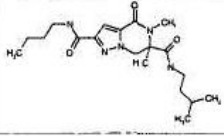
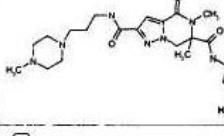
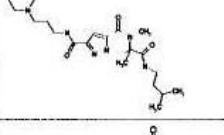
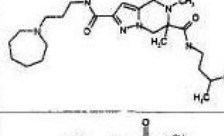
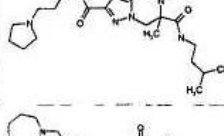
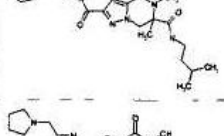
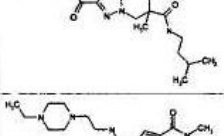
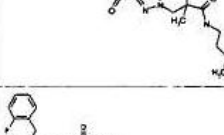
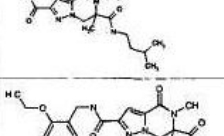
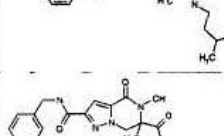
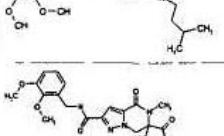
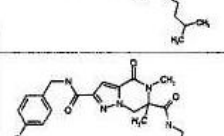

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| 287 |  | 463,64704 | 464 |
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| 289 |  | 497,66455 | 498 |
| 290 |  | 451,57346 | 452 |
| 291 |  | 495,62704 | 496 |
| 292 |  | 455,5368 | 456 |
| 293 |  | 465,60055 | 466 |
| 294 |  | 451,57346 | 452 |
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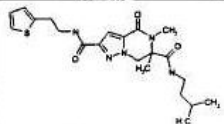
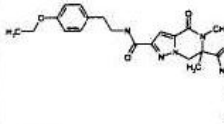
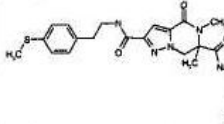
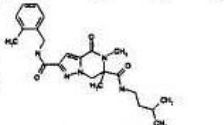
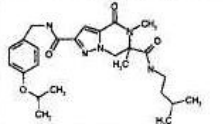
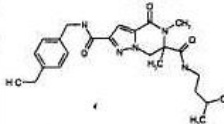
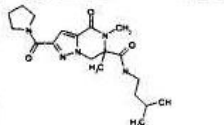

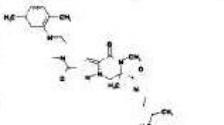
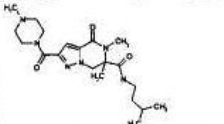
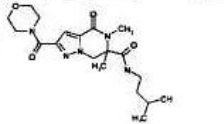
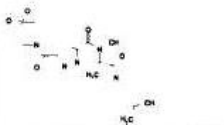
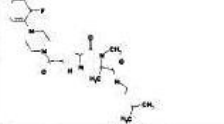
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| 301 |  | 458,60886 | 459 |
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| 303 |  | 473,57705 | 474 |
| 304 |  | 494,60153 | 495 |
| 305 |  | 444,58177 | 445 |
| 306 |  | 441,53462 | 442 |
| 307 |  | 497,59935 | 498 |
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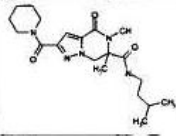
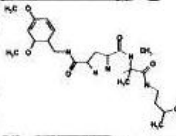
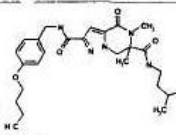
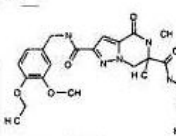
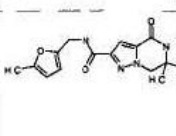
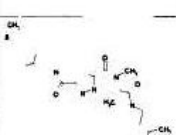
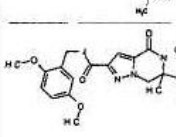
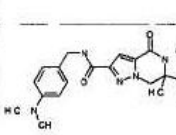
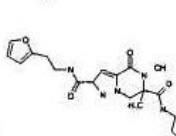
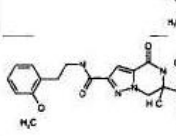
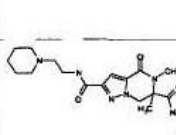
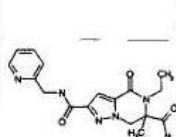
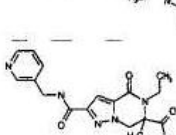
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| 316 |  | 377,49062 | 378 |
| 317 |  | 445,95316 | 446 |
| 318 |  | 445,95316 | 446 |
| 319 |  | 459,98025 | 460 |
| 320 |  | 417,55595 | 418 |
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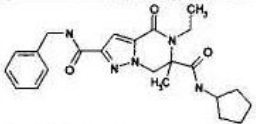
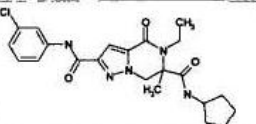
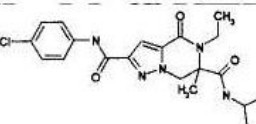
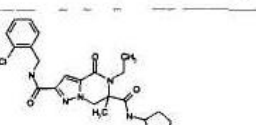
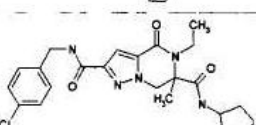
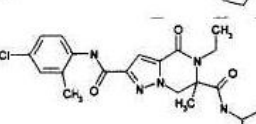
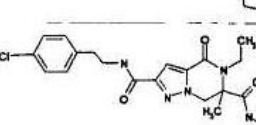
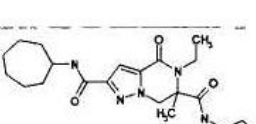
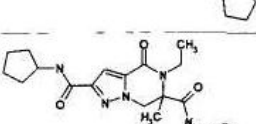
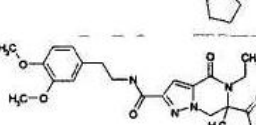
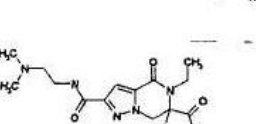
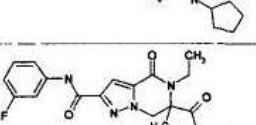
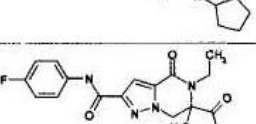
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| 328 | | 363,46353 | 364 |
| 329 | | 363,46353 | 364 |
| 330 | | 425,53522 | 426 |
| 331 | | 448,57002 | 449 |
| 332 | | 361,44759 | 362 |
| 333 | | 391,51771 | 392 |
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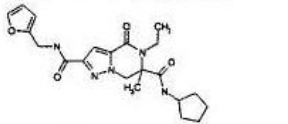
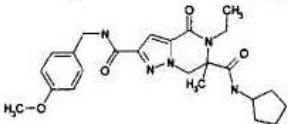
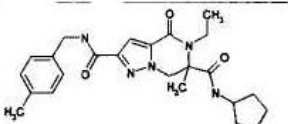
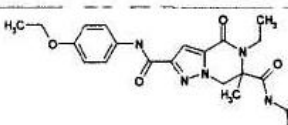
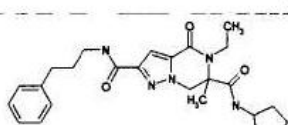
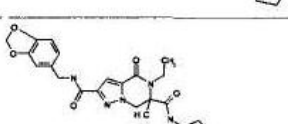
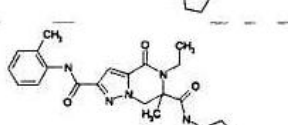
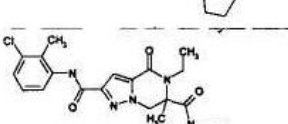
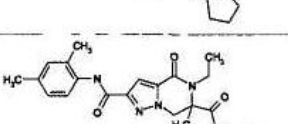
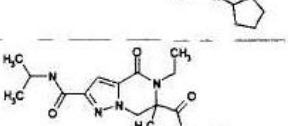
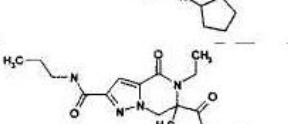
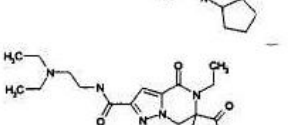
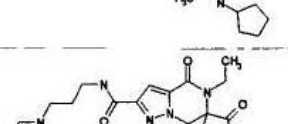
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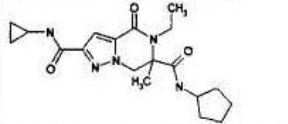
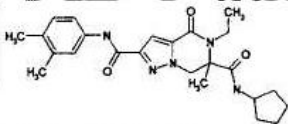
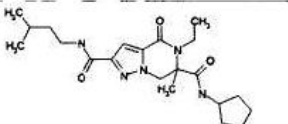
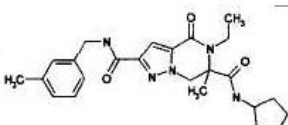
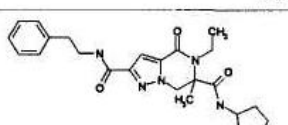
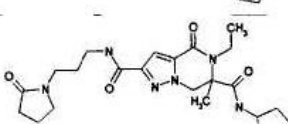
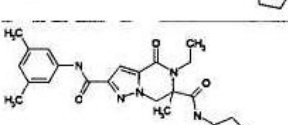
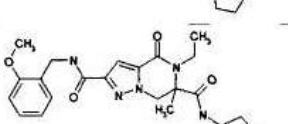
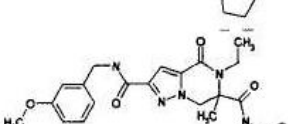
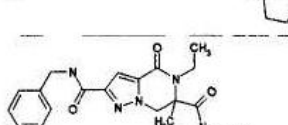
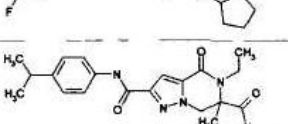
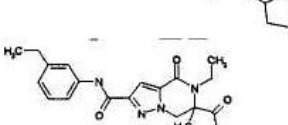
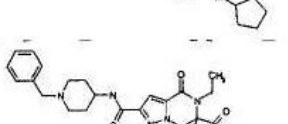
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| 375 |  | 447,53881 | 448 |
| 376 |  | 484,57856 | 485 |

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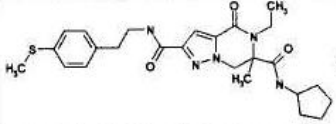
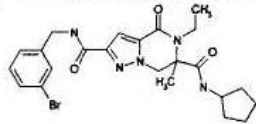
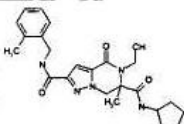
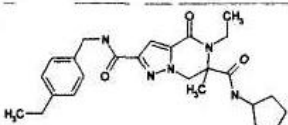
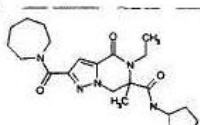

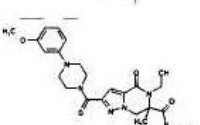
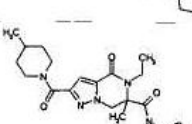
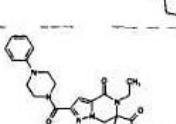
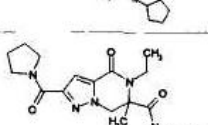
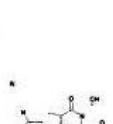
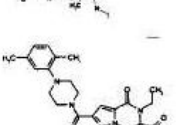
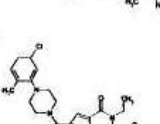
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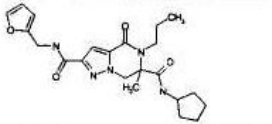
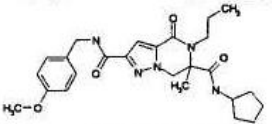
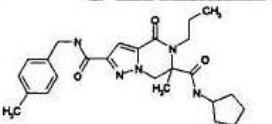
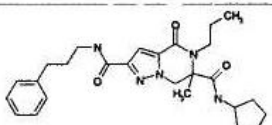
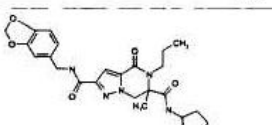
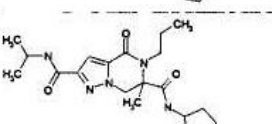
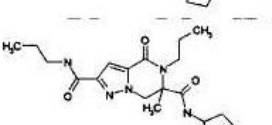
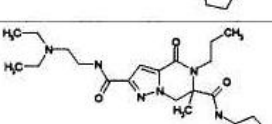
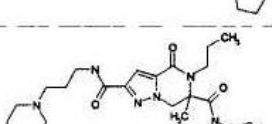
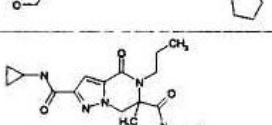
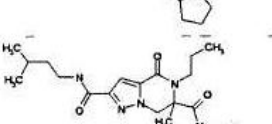
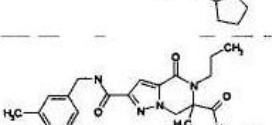
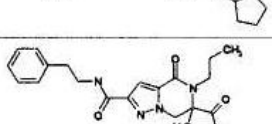
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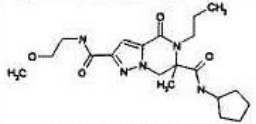
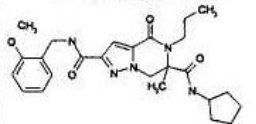
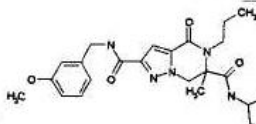
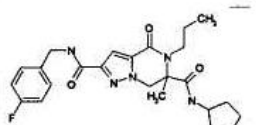
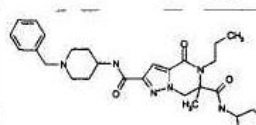
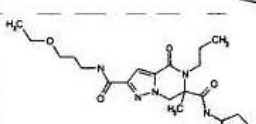
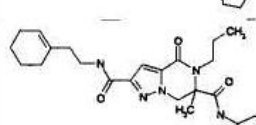
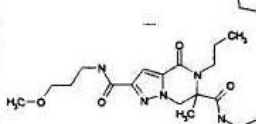
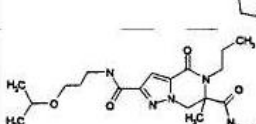
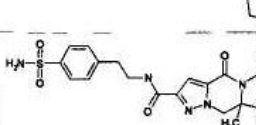
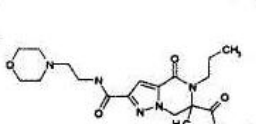
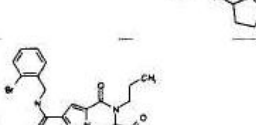
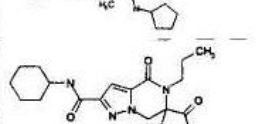
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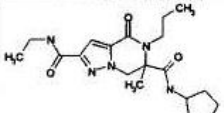
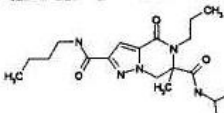
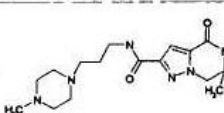
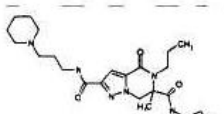
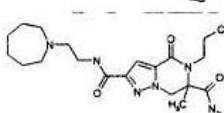
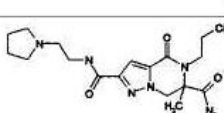
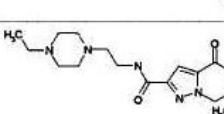
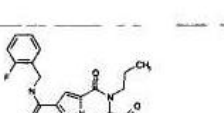
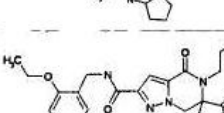
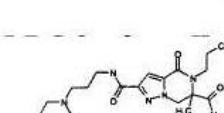
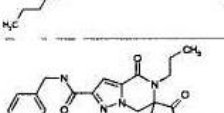
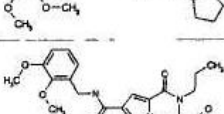
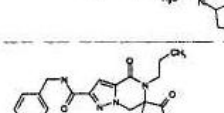
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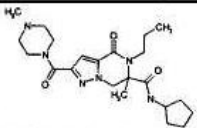
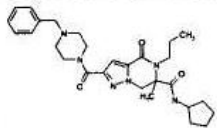
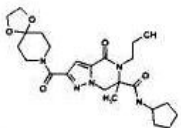
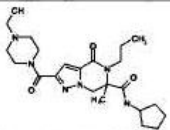
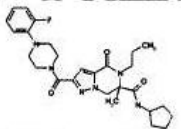
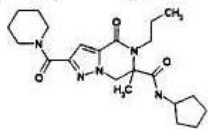
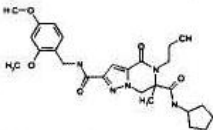
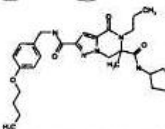
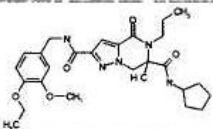
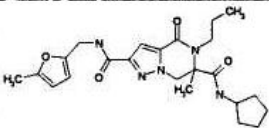
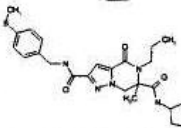
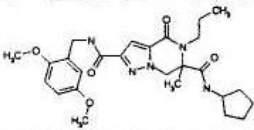
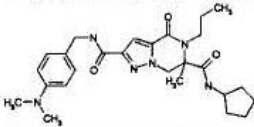
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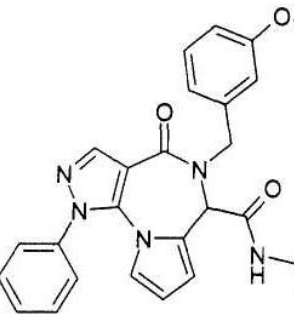
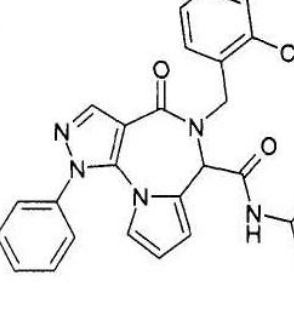
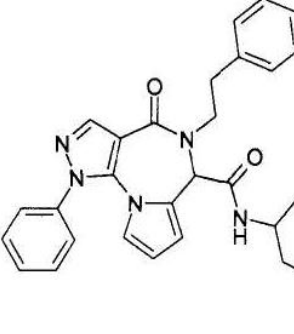
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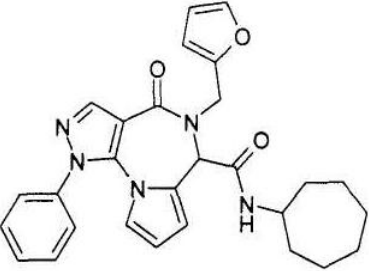
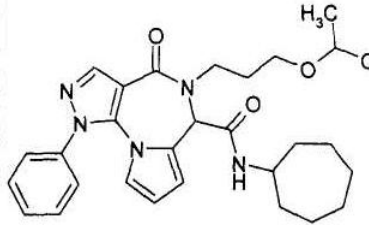
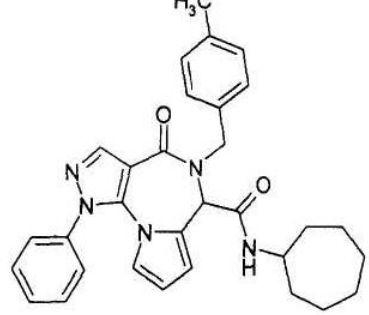
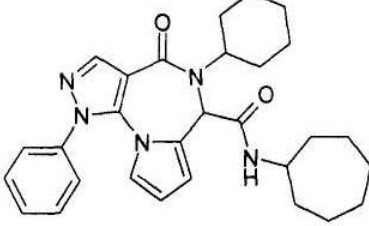
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| 512 |  | 433,55535 | 434 |
| 513 |  | 455,60534 | 456 |
| 514 |  | 419,52826 | 420 |
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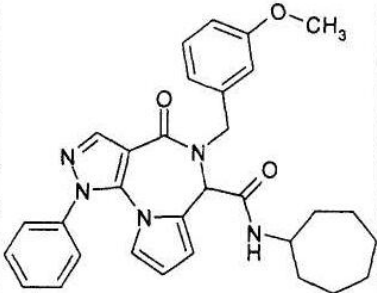
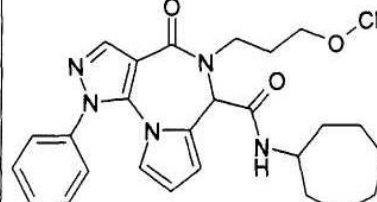
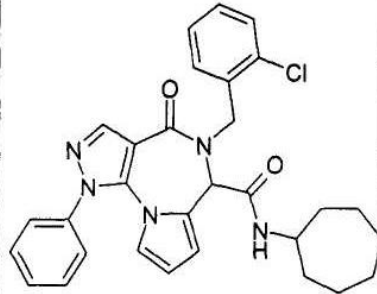
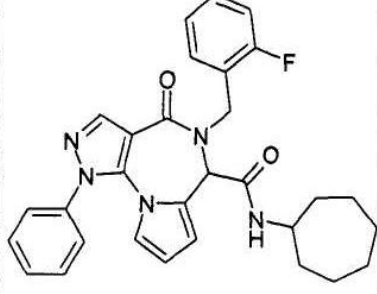
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| 549 |  | 444,58177 | 445 |
| 550 |  | 510,6168 | 511 |
| 551 |  | 415,54001 | 416 |
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| 557 |  | 497,59935 | 498 |
| 558 |  | 480,61522 | 481 |

| № п.п. | Формула | Мол.маса | HRMS m/z | Спектральні дані |
|--------|---|----------|------------|--|
| 1 |  | 510.25 | 510.2493 | ^1H NMR (400MHz, DMSO+CCl ₄): δ 0.75-1.7 (m, 10 H, cyclohexane), 3.26-3.3 (m, 1 H, CH), 3.73 (s, 3 H, CH ₃), 4.67 (d, J = 2.3 Hz, 1 H, CH ₂), 4.8 (d, J = 2.3 Hz, 1 H, CH ₂), 5.35 (s, 1 H, CH), 6.0-6.1 (d, J = 4.9 Hz, 2 H, ArH), 6.15-6.22 (s, 1 H, ArH), 6.8 (d, J = 4.0 Hz, 1 H, NH), 7.0-7.1 (d+d, J = 7.3 Hz, 2 H, ArH), 7.2-7.29 (t, J = 7.3 Hz, 1 H, ArH), 7.38-7.51 (m, 5 H, ArH), 7.82 (s, 1 H, ArH); 510.2493 (M^+). |
| 2 |  | 514.2004 | 514.2005 | ^1H NMR (400MHz, DMSO+CCl ₄): δ 1.0-1.75 (m, 10 H, cyclohexane), 3.3-3.48 (m, 1 H, CH), 4.5-4.6 (d, J = 2.0 Hz, 1 H, CH ₂), 5.16 (s, 1 H, CH), 5.3-5.44 (d, J = 2.0 Hz, 1 H, CH ₂), 5.75-5.8 (t, J = 8.4 Hz, 1 H, ArH), 6.0 (d, J = 7.9, 1 H, ArH), 6.22 (d, J = 7.9 Hz, 1 H, ArH), 7.0-7.5 (m, 10 H, ArH, NH), 7.86 (s, 1 H, ArH) |
| 3 |  | 508.2707 | 508.2703 | ^1H NMR (400MHz, DMSO+CCl ₄): δ 1.1-1.63 (m, 12 H, cyclooctane), 2.7-2.84 (m, 1 H, CH ₂), 2.9-3.08 (m, 1 H, CH ₂), 3.5-3.69 (m, 2 H, CH ₂), 4.0-4.2 (m, 1 H, CH), 5.5 (s, 1 H, CH), 6.07-6.1 (t, J = 8.2 Hz, 1 H, ArH), 6.21 (d, J = 7.7 Hz, 1 H, ArH), 6.27 (d, J = 7.7 Hz, 1 H, ArH), 7.0-7.08 (d, J = 4.2 Hz, 1 H, NH), 7.1-7.22 (m, 5 H, ArH), 7.37-7.5 (m, 5 H, ArH), 7.8 (s, 1 H, ArH) |

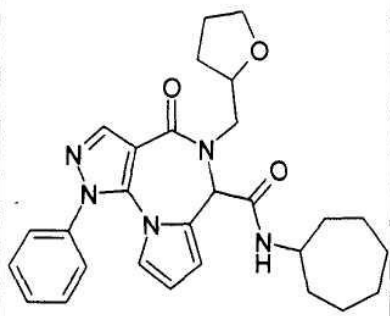
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|---|---|----------|----------|--|
| 4 |  | 484.2343 | 484.2341 | ¹ HNMR (400MHz, DMSO+CCl ₄): δ 1.09-1.64 (m, 12 H, cyclooctane), 3.46-3.6 (m, 1 H, CH), 4.7 (d, <i>J</i> = 2.6 Hz, 1 H, CH ₂), 4.84 (d, <i>J</i> = 2.6 Hz, 1 H, CH ₂), 5.25 (s, 1 H, CH), 6.0-6.1 (m, 2 H, ArH), 6.11-6.17 (t, <i>J</i> = 8.5 Hz, 1 H, ArH), 6.35-6.4 (d, <i>J</i> = 7.8 Hz, 1 H, ArH), 6.46 (d, <i>J</i> = 7.8 Hz, 1 H, ArH), 6.6 (d, <i>J</i> = 5.2 Hz, 1 H, NH), 7.31-7.57 (m, 6 H, ArH), 7.81 (s, 1 H, ArH) |
| 5 |  | 504.2969 | 504.2963 | ¹ HNMR (400MHz, DMSO+CCl ₄): δ 1.1-1.2 (s, 6 H, 2CH ₃), 1.23-1.7 (m, 12 H, 6CH ₂ , cyclooctane), 1.66-1.7 (m, 1 H, CH ₂), 1.7-1.87 (m, 1 H, CH ₂), 3.3-3.55 (m, 4 H, 2CH ₂), 3.59-3.7 (m, 1 H, CH), 3.85-4.1 (m, 1 H, CH), 5.3 (s, 1 H, CH), 6.05-6.1 (t, <i>J</i> = 8.2 Hz, 1 H, ArH), 6.2 (d, <i>J</i> = 7.7 Hz, 1 H, ArH), 6.28 (d, <i>J</i> = 7.7 Hz, 1 H, ArH), 7.05-7.12 (br s, 1 H, NH), 7.35-7.57 (m, 5 H, ArH), 7.8 (s, 1 H, ArH) |
| 6 |  | 508.2707 | 508.2702 | ¹ HNMR (400MHz, DMSO+CCl ₄): δ 0.8-1.55 (m, 12 H, cyclooctane), 2.21 (s, 3 H, CH ₃), 3.35-3.46 (m, 1 H, CH), 4.54 (d, <i>J</i> = 2.7 Hz, 1 H, CH ₂), 4.9 (d, <i>J</i> = 2.7 Hz, 1 H, CH ₂), 5.3 (s, 1 H, CH), 6.05 (t, <i>J</i> = 8.2 Hz, 1 H, ArH), 6.1 (d, <i>J</i> = 7.7 Hz, 1 H, ArH), 6.18 (d, <i>J</i> = 7.7 Hz, 1 H, ArH), 7.15 (d, <i>J</i> = 7.3 Hz, 2 H, ArH), 7.3-7.5 (m, 7 H, ArH), 7.82 (s, 1 H, ArH) |
| 7 |  | 486.2863 | 486.2865 | ¹ HNMR (400MHz, DMSO+CCl ₄): δ 1.09-2.1 (m, 22 H, cyclooctane, cyclohexane), 3.5-3.67 (m, 1 H, CH), 4.41-4.6 (m, 1 H, CH), 5.4 (s, 1 H, CH), 6.07 (t, <i>J</i> = 8.6 Hz, 1 H, ArH), 6.15 (d, <i>J</i> = 7.9 Hz, 1 H, ArH), 6.24 (d, <i>J</i> = 7.9 Hz, 1 H, ArH), 6.6-6.8 (d, <i>J</i> = 4.4 Hz, 1 H, NH), 7.3-7.5 (m, 5 H, ArH), 7.8 (s, 1 H, ArH) |

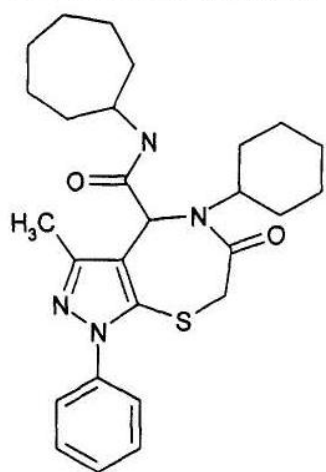
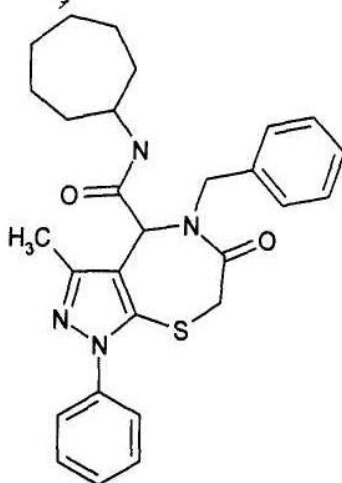
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|----|---|----------|----------|--|
| 8 |  | 524.2656 | 524.2651 | ¹ HNMR (400MHz, DMSO+CCl ₄): δ 0.8-1.53 (m, 12 H, cyclooctane), 3.38-3.5 (m, 1 H, CH), 3.75 (s, 3 H, CH ₃), 4.51 (d, <i>J</i> = 2.8 Hz, 1 H, CH ₂), 4.88 (d, <i>J</i> = 2.8 Hz, 1 H, CH ₂), 5.32 (s, 1 H, CH), 6.0 (s, 1 H, ArH), 6.01 (t, <i>J</i> = 8.4 Hz, 1 H, ArH), 6.07 (d, <i>J</i> = 7.8 Hz, 1 H, ArH), 6.14 (d, <i>J</i> = 7.8 Hz, 1 H, ArH), 6.8 (d, <i>J</i> = 5.2 Hz, 1 H, NH), 7.0-7.1 (m, 2 H, ArH), 7.19-7.3 (m, 1 H, ArH), 7.36-7.5 (m, 5 H, ArH), 7.84 (s, 1 H, ArH) |
| 9 |  | 476.2656 | 476.2652 | ¹ HNMR (400MHz, DMSO+CCl ₄): δ 1.1-1.64 (m, 12 H, cyclooctane), 1.66-2.0 (2m, 2 H, CH ₂), 3.25 (s, 3 H, CH ₃), 3.3-3.38 (m, 2 H, CH ₂), 3.5-3.65 (m, 2 H, CH ₂), 3.72-3.9 (m, 1 H, CH), 5.27 (s, 1 H, CH), 6.05 (t, <i>J</i> = 8.3 Hz, 1 H, ArH), 6.16 (d, <i>J</i> = 7.7 Hz, 1 H, ArH), 6.2 (d, <i>J</i> = 7.7 Hz, 1 H, ArH), 7.2 (d, <i>J</i> = 3.8 Hz, 1 H, NH), 7.35-7.5 (m, 5 H, ArH), 7.79 (s, 1 H, ArH) |
| 10 |  | 528.2161 | 528.2154 | ¹ HNMR (400MHz, DMSO+CCl ₄): δ 1.2-1.6 (m, 12 H, cyclooctane), 3.55-3.67 (m, 1 H, CH), 4.5-4.59 (d, <i>J</i> = 2.0 Hz, 1 H, CH ₂), 5.15 (s, 1 H, CH), 5.26-5.4 (d, <i>J</i> = 2.0 Hz, 1 H, CH ₂), 5.75-5.84 (t, <i>J</i> = 8.4 Hz, 1 H, ArH), 5.94-6.07 (d, <i>J</i> = 7.8 Hz, 1 H, ArH), 6.13-6.24 (d, <i>J</i> = 7.8 Hz, 1 H, ArH), 6.95-7.0 (m, 1 H, NH), 7.15-7.8 (m, 4 H, ArH), 7.82-7.51 (m, 5 H, ArH), 7.8 (s, 1 H, ArH) |
| 11 |  | 512.2456 | 512.2452 | ¹ HNMR (400MHz, DMSO+CCl ₄): δ 1.0-1.63 (m, 12 H, cyclooctane), 3.50-3.62 (m, 1 H, CH), 4.68-4.76 (d, <i>J</i> = 2.2 Hz, 1 H, CH ₂), 4.82-4.9 (d, <i>J</i> = 2.2 Hz, 1 H, CH ₂), 5.4 (s, 1 H, CH), 6.0-6.15 (m, 2 H, ArH), 6.17 (d, <i>J</i> = 8.2 Hz, 1 H, ArH), 6.27-6.45 (m, 1 H, NH), 6.97-7.05 (t(F), <i>J</i> = 9.0 Hz, 1 H, ArH), 7.2-7.4 (dt(F), <i>J</i> = 9.1 Hz, 2 H, ArH), 7.41-7.5 (m, 6 H, ArH), 7.8 (s, 1 H, ArH) |

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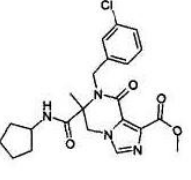
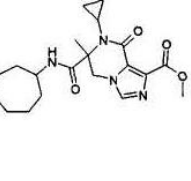
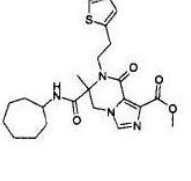
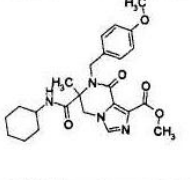
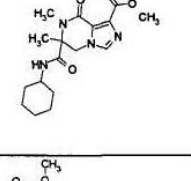
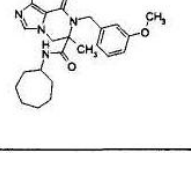
84447

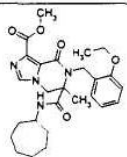
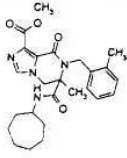
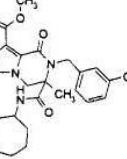
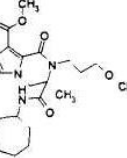
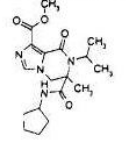
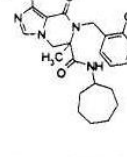
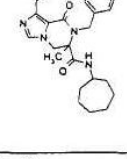
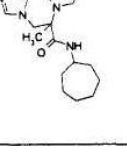
524

| | | | | |
|----|---|----------|---------|---|
| 12 |  | 488.2656 | 488.265 | ¹ HNMR (400MHz, DMSO-CCl ₄): δ 1.0-2.17 (m, 16 H, cyclooctane, tetrahydrofuran), 3.0-3.12 (m, 1 H, CH), 3.55-4.17 (m, 4 H, CH ₂), 4.3-4.4 (m, 1 H, CH), 4.5-4.6 (t, <i>J</i> = 2.6 Hz, 1 H, CH), 5.3, 5.5 (s, s, 1 H, CH ₃), 6.05 (t, <i>J</i> = 8.5 Hz, 1 H, ArH), 6.15 (d, <i>J</i> = 7.9 Hz, 1 H, ArH), 6.16 (d, <i>J</i> = 7.9 Hz, 1 H, ArH), 7.3-7.5 (m, 5 H, ArH), 7.78 (s, 1 H, ArH), 7.9 (d, <i>J</i> = 6.3 Hz, 1 H, NH) |
|----|---|----------|---------|---|

| Таблица 1.07 | | | |
|--------------|---|-----------|------------------------------|
| № п.п. | Формула | Мол. маса | Мас-спектр, <i>m/z</i> (M+1) |
| 1 |  | 480,67757 | 481 |
| 2 |  | 488,65684 | 489 |

Таблиця 1.08.

| № п.п. | Формула | Мол. маса | Спектральні дані |
|--------|---|-----------|--|
| 1 |  | 444,92 | ¹ H NMR (400MHz, DMSO+CCl ₄ , 25 °C): δ=1.13-1.81 (m, 8 H; cyclopentane), 1.49 (s, 3 H; CH ₃), 3.81 (s, 3 H; CH ₃), 3.81-3.83 (m, 1 H; CH), 4.11 (d, J = 5.9 Hz, 1 H; CH ₂), 4.22 (d, J = 5.8 Hz, 1 H; CH ₂), 4.9 (d, J = 5.9 Hz, 1 H; CH ₂), 5.27 (d, J = 5.8 Hz, 1 H; CH ₂), 7.15 (m, 4 H; ArH), 7.41 (d, J = 4.0 Hz, 1 H; NH), 7.68 (s, 1 H; ArH); ¹³ C NMR (75 MHz, DMSO, 25 °C): δ=20.33, 23.46, 23.52, 31.66, 31.82, 45.58, 50.73, 51.13, 51.57, 64.80, 123.51, 125.30, 2×126.44, 129.98, 133.01, 134.18, 136.34, 142.27, 157.94, 162.80, 169.22; HRMS m/z 445.1641 [M ⁺]. |
| 2 |  | 388,47 | ¹ H NMR (400MHz, DMSO+CCl ₄ , 25 °C): δ=0.7-0.88 (m, 4 H; cyclopropane), 1.2-1.71 (m, 12 H; cycloheptane), 1.67 (s, 3 H; CH ₃), 2.46-2.55 (br s, 1 H; CH), 3.58-3.7 (m, 1 H; CH), 3.8 (s, 3 H; CH ₃), 4.08 (d, J = 5.7 Hz, 1 H; CH ₂), 4.73 (d, J = 5.7 Hz, 1 H; CH ₂), 7.31 (br s, 1 H; NH), 7.63 (s, 1 H; ArH); ¹³ C NMR (75 MHz, DMSO, 25 °C): δ=7.8, 8.89, 20.32, 23.62, 23.67, 25.54, 27.45, 27.55, 2×33.80, 50.62, 51.12, 51.50, 65.18, 124.65, 133.63, 135.84, 158.00, 162.81, 169.16; HRMS m/z 388.2184 [M ⁺]. |
| 3 |  | 458,58 | ¹ H NMR (400MHz, DMSO+CCl ₄ , 25 °C): δ=1.23-1.62 (m, 12 H; cycloheptane), 1.52 (s, 3 H; CH ₃), 3.11 (t, J = 4.4 Hz, CH ₂), 3.3-3.45 (m, 1 H; CH), 3.6-3.72 (m, 1 H; CH), 3.81 (s, 3 H; CH ₃), 4.06 (d, J = 6.0 Hz, 1 H; CH ₂), 4.76 (d, J = 6.0 Hz, 1 H; CH ₂), 6.85 (d, J = 7.2 Hz, 1 H; ArH), 6.9 (d+d, J = 6.8 Hz, 1 H; ArH), 7.15 (d, J = 7.2 Hz, 1 H; ArH), 7.51 (d, J = 4.0 Hz, 1 H; NH), 7.62 (s, 1 H; ArH); ¹³ C NMR (75 MHz, DMSO, 25 °C): δ=19.72, 2×23.46, 27.13, 27.17, 28.82, 33.48, 33.51, 44.43, 50.40, 50.53, 51.09, 64.10, 123.01, 123.55, 124.83, 126.62, 134.04, 135.89, 140.80, 156.77, 162.51, 168.26; HRMS m/z 458.2061 [M ⁺]. |
| 4 |  | 454,53 | ¹ H NMR (400MHz, DMSO+CCl ₄ , 25 °C): δ=1.0-1.68 (m, 10 H; cyclohexane), 1.5 (s, 3 H; CH ₃), 3.39-3.42 (m, 1 H; CH), 3.7 (s, 3 H; CH ₃), 3.8 (s, 3 H; CH ₃), 4.05 (d, J = 6.2 Hz, 1 H; CH ₂), 4.28 (d, J = 5.8 Hz, 1 H; CH ₂), 4.87 (d, J = 6.2 Hz, 1 H; CH ₂), 5.21 (d, J = 5.8 Hz, 1 H; CH ₂), 6.8 (d, J = 7.8 Hz, 2 H; ArH), 7.12 (t, J = 5.2 Hz, 2 H; ArH), 7.22 (br s, 1 H; NH), 7.62 (s, 1 H; ArH); HRMS m/z 454.5260 [M ⁺]. |
| 5 |  | 348,41 | ¹ H NMR (400MHz, DMSO+CCl ₄ , 25 °C): δ=1.1-1.83 (m, 10 H; cyclohexane), 1.53 (s, 3 H; CH ₃), 3.05 (s, 1 H; CH ₃), 3.46-3.51 (m, 1 H; CH), 3.80 (s, 3 H; CH ₃), 4.11 (d, J = 5.8 Hz, 1 H; CH ₂), 4.71 (d, J = 5.8 Hz, 1 H; CH ₂), 7.52 (d, J = 4.2 Hz, 1 H; NH), 7.61 (s, 1 H; ArH); HRMS m/z 348.4015 [M ⁺]. |
| 6 |  | 468,56 | ¹ H NMR (400MHz, DMSO+CCl ₄ , 25 °C): δ=1.12-1.7 (m, 12 H; cycloheptane), 1.56 (s, 3 H; CH ₃), 3.5-3.61 (m, 1 H; CH), 3.7 (s, 3 H; CH ₃), 3.8 (s, 3 H; CH ₃), 4.07 (d, J = 6.0 Hz, 1 H; CH ₂), 4.27 (d, J = 5.8 Hz, 1 H; CH ₂), 4.83 (d, J = 6.0 Hz, 1 H; CH ₂), 5.22 (d, J = 5.8 Hz, 1 H; CH ₂), 6.7 (d, J = 4.4 Hz, 1 H; NH), 6.84 (s+d, 2 H; ArH), 7.24 (d+d, J = 7.6 Hz, 2 H; ArH), 7.62 (s, 1 H; ArH); HRMS m/z 468.5527 [M ⁺]. |

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| 7 |  | 482,58 | ¹ HNMR (400MHz, DMSO+CCl ₄ , 25 °C): δ=1.2-1.8 (m, 12 H; cycloheptane), 1.54 (s, 6 H; 2CH ₃), 3.5-3.61 (m, 1 H; CH), 3.71 (s, 3 H; CH ₃), 4.1 (m, 3 H; CH, CH ₂), 4.4 (d, <i>J</i> = 6.2 Hz, 1 H; CH ₂), 4.90 (d, <i>J</i> = 6.0 Hz, 1 H; CH ₂), 5.12 (d, <i>J</i> = 5.9 Hz, 1 H; CH ₂), 6.8 (d+d, <i>J</i> = 7.8 Hz, 2 H; ArH), 7.13 (t, 2 H; ArH), 6.8 (d, <i>J</i> = 4.4 Hz, 1 H; NH), 7.24 7.62 (s, 1 H; ArH); HRMS <i>m/z</i> 482.5791 [M ⁺]. |
| 8 |  | 452,56 | ¹ HNMR (400MHz, DMSO+CCl ₄ , 25 °C): δ=1.27-1.66 (m, 12 H; cycloheptane), 1.50 (s, 3 H; CH ₃), 2.32 (s, 3 H; CH ₃), 3.58-3.67 (m, 1 H; CH), 3.8 (s, 3 H; CH ₃), 4.1 (d, <i>J</i> = 6.2 Hz, 1 H; CH ₂), 4.2 (d, <i>J</i> = 5.8 Hz, 1 H; CH ₂), 4.88 (d, <i>J</i> = 6.2 Hz, 1 H; CH ₂), 5.27 (d, <i>J</i> = 5.8 Hz, 1 H; CH ₂), 7.0-7.21 (m, 4 H; ArH), 7.5 (d, <i>J</i> = 4.6 Hz, 1 H; NH), 7.7 (s, 1 H; ArH); HRMS <i>m/z</i> 452.5539 [M ⁺]. |
| 9 |  | 452,56 | ¹ HNMR (400MHz, DMSO+CCl ₄ , 25 °C): δ=1.2-1.61 (m, 12 H; cycloheptane), 1.51 (s, 3 H; CH ₃), 2.31 (s, 3 H; CH ₃), 3.51-3.65 (m, 1 H; CH), 3.8 (s, 3 H; CH ₃), 4.06 (d, <i>J</i> = 6.2 Hz, 1 H; CH ₂), 4.25 (d, <i>J</i> = 5.8 Hz, 1 H; CH ₂), 4.84 (d, <i>J</i> = 6.2 Hz, 1 H; CH ₂), 5.27 (d, <i>J</i> = 5.8 Hz, 1 H; CH ₂), 7.0 (d, <i>J</i> = 4.0 Hz, 1 H; NH), 7.08-7.2 (m, 4 H; ArH), 7.67 (s, 1 H; ArH); HRMS <i>m/z</i> 452.5538 [M ⁺]. |
| 10 |  | 420,51 | ¹ HNMR (400MHz, DMSO+CCl ₄ , 25 °C): δ=1.2-1.71 (m, 12 H; cycloheptane), 1.52 (s, 3 H; CH ₃), 1.8-2.0 (m, 2 H; CH ₂), 3.22 (s, 3 H; CH ₃), 3.3-3.5 (m, 3 H; CH ₂), 3.5-3.67 (m, 2 H; CH, CH ₂), 3.8 (s, 3 H; CH ₃), 4.08 (d, <i>J</i> = 5.8 Hz, 1 H; CH ₂), 4.78 (d, <i>J</i> = 5.8 Hz, 1 H; CH ₂), 7.44 (d, <i>J</i> = 4.8 Hz, 1 H; NH), 7.6 (s, 1 H; ArH); HRMS <i>m/z</i> 420.5095 [M ⁺]. |
| 11 |  | 362,43 | ¹ HNMR (400MHz, DMSO+CCl ₄ , 25 °C): δ=1.12-2.0 (m, 8 H; cyclopentane), 1.4 (s, 3 H; CH ₃), 1.5 (s, 3 H; CH ₃), 1.6 (s, 3 H; CH ₃), 3.12-3.3 (m, 1 H; CH), 3.8 (s, 3 H; CH ₃), 3.9-4.02 (m, 1 H; CH), 4.2 (d, <i>J</i> = 5.8 Hz, 1 H; CH ₂), 4.5 (d, <i>J</i> = 5.8 Hz, 1 H; CH ₂), 7.58 (s, 4 H; ArH), 7.9 (d, <i>J</i> = 4.2 Hz, 1 H; NH); HRMS <i>m/z</i> 362.4287 [M ⁺]. |
| 12 |  | 472,98 | ¹ HNMR (400MHz, DMSO+CCl ₄ , 25 °C): δ=1.24-1.63 (m, 12 H; cycloheptane), 1.5 (s, 3 H; CH ₃), 3.61-3.7 (m, 1 H; CH), 3.81 (s, 3 H; CH ₃), 4.2 (d, <i>J</i> = 6.2 Hz, 1 H; CH ₂), 4.29 (d, <i>J</i> = 5.8 Hz, 1 H; CH ₂), 4.94 (d, <i>J</i> = 6.2 Hz, 1 H; CH ₂), 5.33 (d, <i>J</i> = 5.8 Hz, 1 H; CH ₂), 7.12-7.3 (m, 4 H; ArH), 7.44-7.53 (br s, 1 H; NH), 7.7 (s, 1 H; ArH); HRMS <i>m/z</i> 472.9711 [M ⁺]. |
| 13 |  | 472,98 | ¹ HNMR (400MHz, DMSO+CCl ₄ , 25 °C): δ=1.21-1.75 (m, 12 H; cycloheptane), 1.51 (s, 3 H; CH ₃), 3.53-3.7 (m, 1 H; CH), 3.85 (s, 3 H; CH ₃), 4.1 (d, <i>J</i> = 6.0 Hz, 1 H; CH ₂), 4.21 (d, <i>J</i> = 5.8 Hz, 1 H; CH ₂), 4.88 (d, <i>J</i> = 6.0 Hz, 1 H; CH ₂), 5.31 (d, <i>J</i> = 5.8 Hz, 1 H; CH ₂), 7.21 (m, 4 H; ArH), 7.42 (d, <i>J</i> = 4.4 Hz, 1 H; NH), 7.69 (s, 1 H; ArH); HRMS <i>m/z</i> 472.9719 [M ⁺]. |
| 14 |  | 487,00 | ¹ HNMR (400MHz, DMSO+CCl ₄ , 25 °C): δ=1.27-1.77 (m, 12 H; cycloheptane), 1.51 (s, 3 H; CH ₃), 2.8-3.0 (t, <i>J</i> = 3.8 Hz, 1 H; CH ₂), 3.21-3.3 (q, <i>J</i> = 3.8 Hz, 1 H; CH ₂), 3.57-3.72 (m, 1 H; CH), 3.8-3.85 (m, 1 H; CH), 3.85 (s, 3 H; CH ₃), 4.06 (d, <i>J</i> = 5.7 Hz, 1 H; CH ₂), 4.76 (d, <i>J</i> = 5.7 Hz, 1 H; CH ₂), 7.22 (m, 4 H; ArH), 7.42 (br s, 1 H; NH), 7.67 (s, 1 H; ArH); HRMS <i>m/z</i> 486.9980 [M ⁺]. |

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| 15 | | 466,59 | ¹ HNMR (400MHz, DMSO+CCl ₄ , 25 °C): δ=1.25-1.76 (m, 12 H; cycloheptane), 1.53 (s, 3 H; CH ₃), 1.8-2.0 (m+m, 2H, CH ₂), 2.62 (t, <i>J</i> = 4.0 Hz, 2 H, CH ₂), 3.18-3.28 (m, 1 H; CH ₂), 3.52-3.74 (m, 2 H; CH, CH ₂), 3.81 (s, 3 H; CH ₃), 4.02 (d, <i>J</i> = 5.6 Hz, 1 H; CH ₂), 4.72 (d, <i>J</i> = 5.6 Hz, 1 H; CH ₂), 7.1-7.27 (m, 5 H; ArH), 7.4 (d, <i>J</i> = 4.4 Hz, 1 H; NH), 7.63 (s, 1 H; ArH); HRMS <i>m/z</i> 466.5803 [M ⁺]. |
| 16 | | 456,52 | ¹ HNMR (400MHz, DMSO+CCl ₄ , 25 °C): δ=1.22-1.7 (m, 12 H; cycloheptane), 1.5 (s, 3 H; CH ₃), 3.51-3.67 (m, 1 H; CH), 3.82 (s, 3 H; CH ₃), 4.08 (d, <i>J</i> = 6.2 Hz, 1 H; CH ₂), 4.20 (d, <i>J</i> = 5.8 Hz, 1 H; CH ₂), 4.89 (d, <i>J</i> = 6.2 Hz, 1 H; CH ₂), 5.3 (d, <i>J</i> = 5.8 Hz, 1 H; CH ₂), 7.0 (dd, <i>J</i> = 7.6 Hz, 2 H; ArH), 7.28-7.39 (m(F), 2 H, ArH), 7.41 (d, <i>J</i> = 4.4 Hz, 1 H; NH), 7.68 (s, 1 H; ArH); HRMS <i>m/z</i> 456.5170 [M ⁺]. |
| 17 | | 456,59 | ¹ HNMR (400MHz, DMSO+CCl ₄ , 25 °C): δ=1.21-1.73 (m, 12 H; cycloheptane), 1.21-1.73 (m, 4 H; cyclohexene), 1.53 (s, 3 H; CH ₃), 2.04 (m, 2 H; CH ₂), 2.1-2.26 (m, 4 H; cyclohexene), 3.13-3.26 (m, 1 H; CH ₂), 3.6-3.8 (m, 2 H; CH, CH ₂), 3.8 (s, 3 H; CH ₃), 4.05 (d, <i>J</i> = 5.7 Hz, 1 H; CH ₂), 4.72 (d, <i>J</i> = 5.7 Hz, 1 H; CH ₂), 5.4 (s, 1 H, CH), 7.37 (d, <i>J</i> = 4.4 Hz, 1 H; NH), 7.64 (s, 1 H; ArH); HRMS <i>m/z</i> 456.5858 [M ⁺]. |
| 18 | | 496,61 | ¹ HNMR (400MHz, DMSO+CCl ₄ , 25 °C): δ=1.3-1.65 (m, 12 H; cycloheptane), 1.45 (t, <i>J</i> = 5.4 Hz, 3 H; CH ₃), 1.52 (s, 3 H; CH ₃), 2.8-3.0 (m, 2 H; CH ₂), 3.21-3.29 (m, 1 H; CH ₂), 3.59-3.71 (m, 1 H; CH), 3.86 (s, 3 H; CH ₃), 3.9-4.03 (m, 4 H; CH, CH ₂), 4.77 (d, <i>J</i> = 5.8 Hz, 1 H; CH ₂), 6.82 (d, <i>J</i> = 7.8 Hz, 2 H; ArH), 7.11 (d, <i>J</i> = 7.8 Hz, 2 H; ArH), 7.41 (br s, 1 H; NH), 7.64 (s, 1 H; ArH); HRMS <i>m/z</i> 496.6071 [M ⁺]. |
| 19 | | 334,38 | ¹ HNMR (400MHz, DMSO+CCl ₄ , 25 °C): δ=1.0-1.5 (m, 10 H; cyclohexane), 1.62 (s, 3 H; CH ₃), 3.03 (s, 3 H; CH ₃), 3.41-3.58 (m, 1 H; CH), 4.3 (d, <i>J</i> = 5.8 Hz, 1 H; CH ₂), 4.8 (d, <i>J</i> = 5.8 Hz, 1 H; CH ₂), 7.88 (s, 1 H; ArH), 7.9 (d, <i>J</i> = 4.2 Hz, 1 H; NH), 14.63 (s, 1 H; OH); ¹³ C NMR (75 MHz, DMSO, 25 °C) δ=19.46, 24.50, 24.61, 24.99, 29.10, 31.81, 31.89, 48.81, 50.03, 64.89, 123.22, 135.14, 137.98, 159.95, 161.25, 167.63; HRMS <i>m/z</i> 334.1712 [M ⁺]. |
| 20 | | 478,60 | ¹ HNMR (400MHz, DMSO+CCl ₄ , 25 °C): δ=1.1-1.8 (m, 10 H; cyclohexane), 1.61 (s, 3 H; CH ₃), 2.91 (s, 3 H; CH ₃), 3.0-3.33 (m, 6 H; 3CH ₂), 3.4-3.54 (m, 1 H; CH), 3.8-3.91 (m, 2 H; CH ₂), 4.17 (d, <i>J</i> = 5.9 Hz, 1 H; CH ₂), 4.72 (d, <i>J</i> = 5.9 Hz, 1 H; CH ₂), 6.75 (t, <i>J</i> = 5.2 Hz, 1 H; ArH), 6.88 (d, <i>J</i> = 7.8 Hz, 2 H; ArH), 7.22 (t, <i>J</i> = 5.2 Hz, 2 H; ArH), 7.68 (d, <i>J</i> = 4.2 Hz, 1 H; NH), 7.71 (s, 1 H; ArH); ¹³ C NMR (75 MHz, DMSO, 25 °C) δ=19.92, 24.54, 24.64, 25.06, 28.09, 31.91, 45.73, 48.06, 48.51, 48.62, 50.19, 64.13, 2×115.86, 119.25, 119.61, 2×128.81, 128.91, 136.38, 137.52, 150.75, 158.17, 163.09, 168.64; HRMS <i>m/z</i> 478.2772 [M ⁺]. |

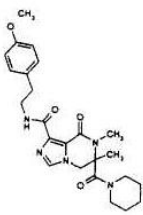
| | | | |
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| 21 |  | 453,55 | ¹ H NMR (400 MHz, DMSO- <i>d</i> ₆ +CCl ₄ , 25 °C): δ=1.1-1.35 (m, 5 H; cyclohexane), 1.58 (s, 3 H; CH ₃), 1.59-1.76 (m, 5 H; cyclohexane), 3.01 (s, 3 H; CH ₃), 3.45-3.57 (m, 1 H; CH), 4.25 (d, <i>J</i> = 5.8 Hz, 1 H; CH ₂), 4.4-4.52 (m, 2 H; CH ₂), 4.84-4.95 (m, 1 H; CH ₂), 6.8 (d, <i>J</i> = 7.8 Hz, 1 H; ArH), 7.24 (d, <i>J</i> = 7.8 Hz, 1 H; ArH), 7.86 (s, 1 H; ArH), 7.92 (d, <i>J</i> = 4.0 Hz, 1 H; NH), 10.86 (br s, 1 H; NH); ¹³ C NMR (75 MHz, DMSO, 25 °C) δ=19.79, 24.52, 24.63, 25.01, 29.03, 31.83, 31.92, 48.58, 50.07, 54.98, 64.04, 2×113.73, 121.17, 2×128.54, 131.14, 136.68, 138.05, 158.18, 159.96, 160.22, 168.19; HRMS <i>m/z</i> 453.2445 [M ⁺]. |
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Таблица 1.09

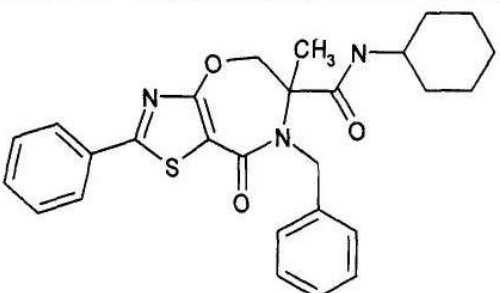
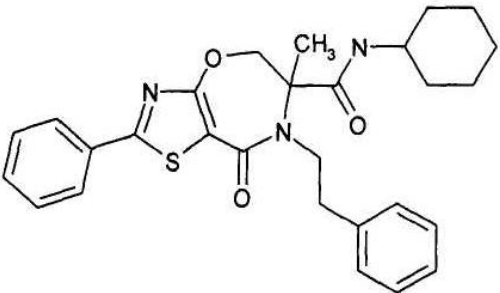
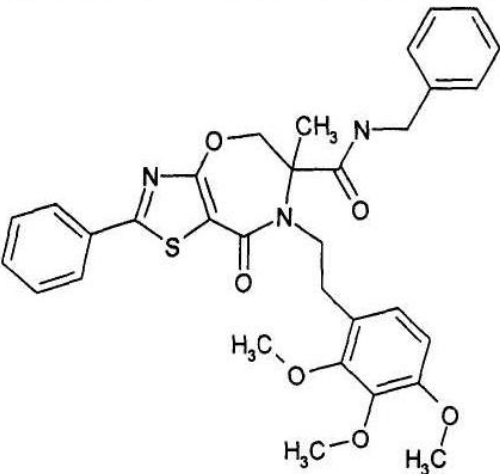
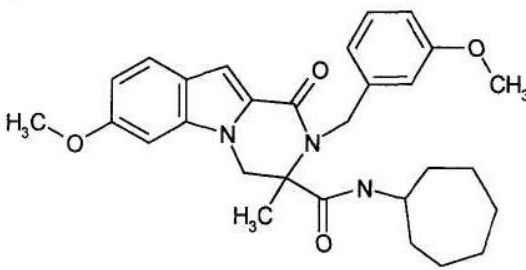
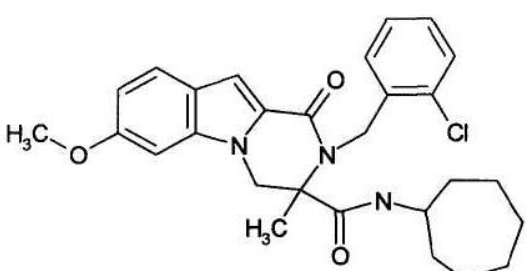
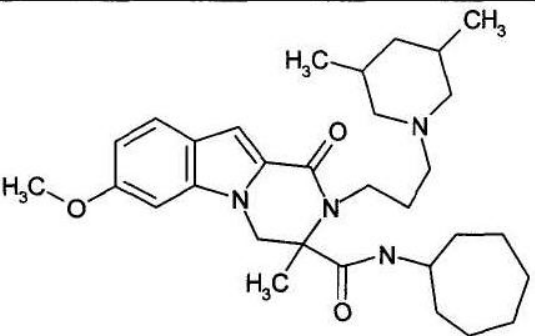
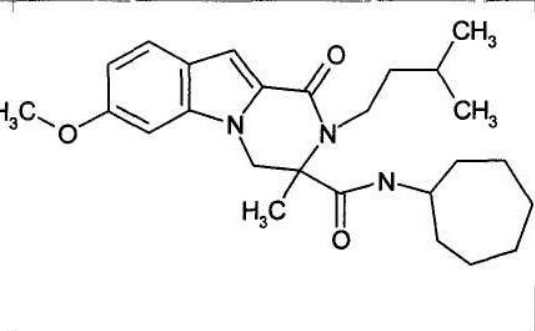
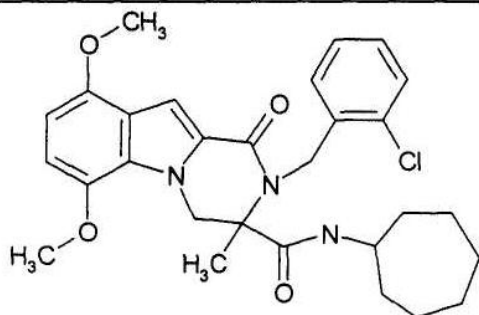
| № п.п. | Формула | Мол. маса | Мас-спектр, <i>m/z</i> (M+1) |
|--------|---|-----------|------------------------------|
| 1 |  | 475,61448 | 476 |
| 2 |  | 489,64157 | 490 |
| 3 |  | 587,70031 | 588 |

Таблица 1.10(1)

| № п.п. | Формула | Мол. масса | Мас -спектр, m/z (M+1), ПМР спектр |
|--------|---|------------|--|
| 1 |  | 489,6200 | <p>LC MS, m/z: 490. (M+1). ^1H NMR: m. 1.09 - 1.57 (15H, CH of cycloheptyl and CH₃ of cycle), m. 3.50-3.62 (1H, CH of cycloheptyl), s. 3.77 (3H, OCH₃ at m-MeOPh), s. 3.85 (3H, OCH₃ at 6CH of indolic ring), dd. 4.00, 4.93 (J=12.65Hz, 2H, CH₂ of cycle), dd. 4.28, 5.26 (J=16.80 Hz, 2H, N-CH₂-Ph) m. 6.67-6.75 (2H, CH at C5 of indolic ring and CH of m-MeOPh), s. 6.85 (1H, CH at C7 of indolic ring), br.s. 6.89 (2H, 2CH of m-MeOPh), s. 7.00 (1H, CH at C3 of indolic ring), m. 7.09-7.22 (2H, CH of m-MeOPh and NH of CO-NH-cycloheptyl), d. 7.47 (J=9.2Hz, 1H, CH at C4 of indolic ring)</p> |
| 2 |  | 494,0385 | <p>LC MS, m/z: 495. (M+1). ^1H NMR: m. 1.15 - 1.647 (15H, CH of cycloheptyl and CH₃ of cycle), m. 3.59-3.70 (1H, CH of cycloheptyl), s. 3.86 (3H, OCH₃ at C6 of indolic ring), dd. 4.10, 5.00 (J=12.95Hz, 2H, CH₂ of cycle), dd. 4.30, 5.27 (J=17.40Hz, 2H, N-CH₂-Ph) d. 6.71 (JH₄H₅ = 8.80Hz, 1H, CH at C5 of indolic ring), s. 6.856 (1H, CH at C7 of indolic ring), s. 6.99 (1H, CH at C3 of indolic ring), m. 7.16-7.26 (2H, 2CH of o-ClPh), m. 7.32-7.38 (2H, 2CH of o-ClPh), d. 7.43 (J=8.10Hz, 1H, NH of CO-NH-cycloheptyl) d. 7.48 (JH₄H₅ = 8.80Hz, 1H, CH at C5 of indolic ring)</p> |

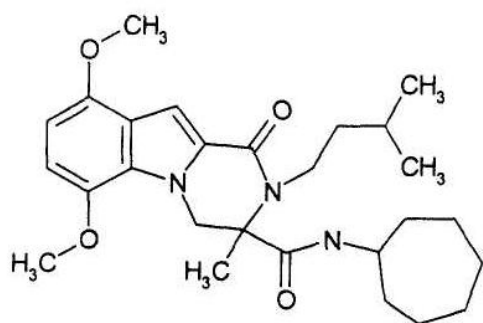
| | |
|--|--|
| <p>3</p>  | <p>LC MS, m/z: 523. (M+1). ¹H NMR: m. 0.40 - 2.35 (32H, CH and CH₃ of alkyl), m. 2.75-2.90 (1H, CH of alkyl), m. 3.14-3.26 (1H, CH of alkyl), m. 3.48-3.62 (1H, CH of alkyl), m. 3.65-3.75 (1H, CH of cycloheptyl), s. 3.84 (3H, OCH₃ at C6 of indolic ring), dd. 4.04, 4.70 (J=12.65Hz, 2H, CH₂ of cycle), d. 6.69 (JH₄H₅ = 9.15Hz, 1H, CH at C5 of indolic ring), s. 6.85 (1H, CH at C7 of indolic ring), s. 6.92 (1H, CH at C3 of indolic ring), br.d. 7.30 (1H, NH of CO-NH-cycloheptyl), d. 7.44 (JH₄H₅ = 9.15Hz, 1H, CH at C4 of indolic ring)</p> <p>522,7373</p> |
| <p>4</p>  | <p>LC MS, m/z: 440. (M+1). ¹H NMR: d. 0.97 (J=6.05Hz, 6H, 2CH₃ of alkyl), m. 1.29 - 1.72 (18H, CH of alkyl and CH₃ of cycle), m. 3.12-3.20 (1H, CH of alkyl), m. 3.48-3.55 (1H, CH of alkyl), m. 3.65-3.75 (1H, CH of cycloheptyl) s. 3.84 (3H, OCH₃ at C6 of indolic ring), dd. 4.04, 4.69 (J=12.35Hz, 2H, CH₂ of cycle), d. 6.67. (JH₄H₅ = 8.70Hz, 1H, CH at C5 of indolic ring), s. 6.85 (1H, CH at C7 of indolic ring), s. 6.92 (1H, CH at C3 of indolic ring), d. 7.37 (J=8.30Hz, 1H, NH of CO-NH-cycloheptyl), d. 7.43 (JH₄H₅ = 8.70Hz, 1H, CH at C4 of indolic ring)</p> <p>439,6031</p> |



5

524,0650

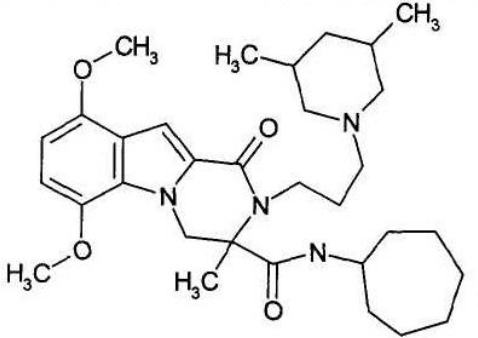
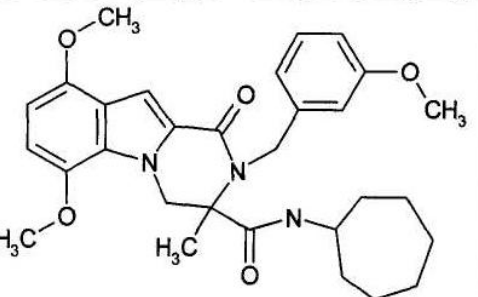
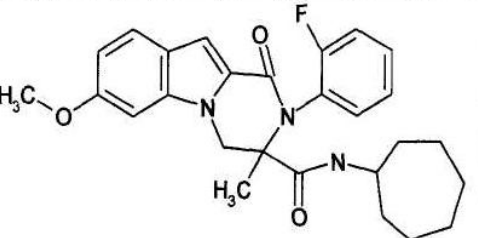
LC MS, m/z: 525. (M+1). ¹H NMR: m. 1.20 - 1.64 (15H, CH of cycloheptyl and CH₃ of cycle), m. 3.58-3.70 (1H, CH of cycloheptyl), s. 3.87 (3H, OCH₃ at C4 of indolic ring), s. 3.91 (3H, OCH₃ at C7 of indolic ring), dd. 4.25, 5.27 (J=18.70Hz, 2H, N-CH₂-Ph) dd. 4.30, 5.40 (J=13.20Hz, 2H, CH₂ of cycle), d. 6.30 (JH₅H₆ = 8.45 Hz 1H, H at C5 of indolic ring), d. 6.56 (JH₅H₆ = 8.45 Hz 1H, H at C6 of indolic ring), s. 7.07 (1H, H at C3 of indolic ring), m. 7.16-7.26 (4H, 4CH of o-ClPh) d. 7.50 (J=7.8Hz, 1H NH of CO-NH-cycloheptyl)

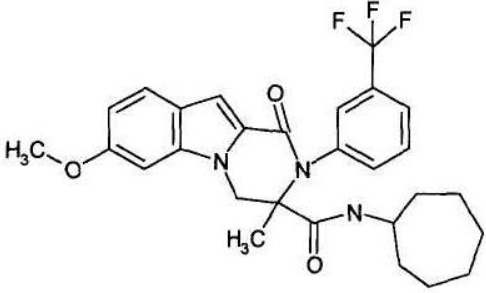
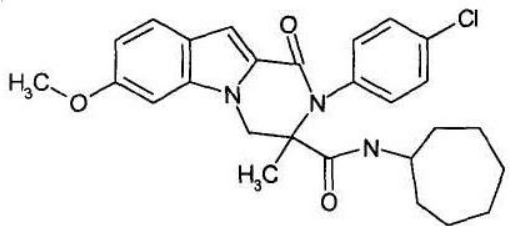
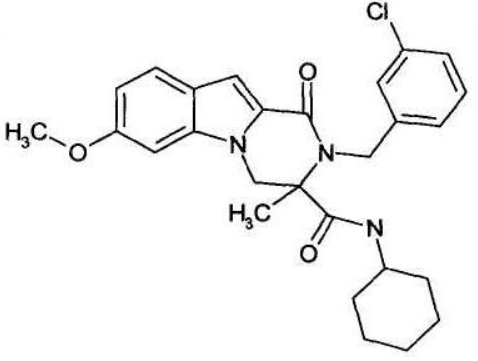
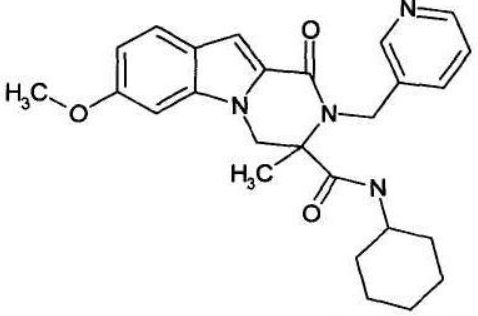


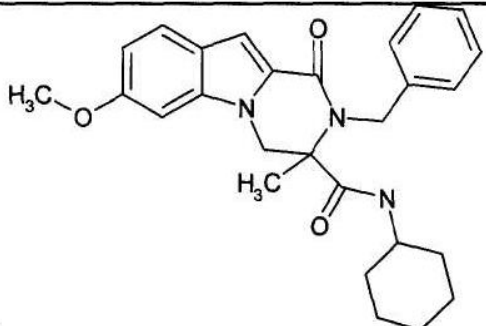
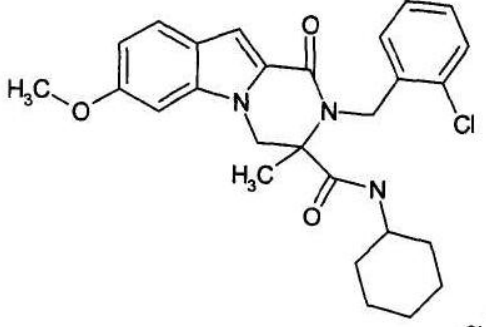
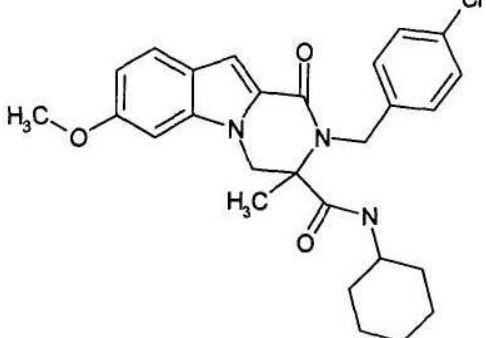
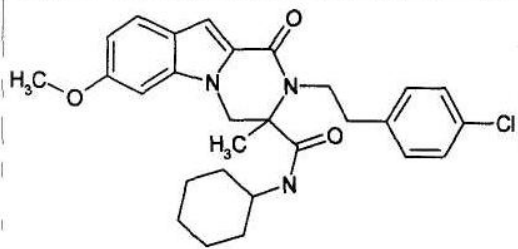
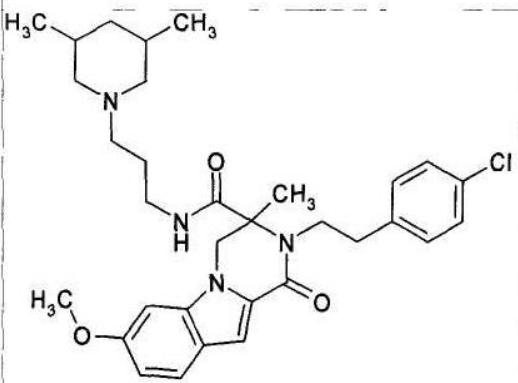
6

469,6296

LC MS, m/z: 470. (M+1). ¹H NMR: d. 0.96 (J=6.10Hz, 6H, 2CH₃ of alkyl), m. 1.30 - 1.72 (18H, CH of alkyl and CH₃ of cycle), m. 3.04-3.15 (1H, CH of alkyl), m. 3.51-3.61 (1H, CH of alkyl), m. 3.66-3.76 (1H, CH of cycloheptyl) s. 3.86 (3H, OCH₃ at C4 of indolic ring), s. 3.89 (3H, OCH₃ at C7 of indolic ring), dd. 4.28, 5.04 (J=13.00Hz, 2H, CH₂ of cycle), d. 6.27 (JH₅H₆ = 8.20 Hz 1H, H at C5 of indolic ring), d. 6.52 (JH₅H₆ = 8.20 Hz 1H, H at C6 of indolic ring), s. 6.98 (1H, H at C3 of indolic ring), d. 7.37 (J=8.2Hz, 1H, NH of CO-NH-cycloheptyl)

| | | | |
|---|---|----------|--|
| 7 |  | 552,7638 | <p>LC MS, m/z: 553. (M+1). ¹H NMR: mm. 0.41 - 2.31 (32H, CH and CH₃ of alkyl), m. 2.72-2.84(1H, CH of alkyl), m. 3.10-3.22 (1H, CH of alkyl), m. 3.45-3.59(1H, CH of alkyl), m. 3.64-3.74 (1H, CH of cycloheptyl), s. 3.86 (3H, OCH₃ at C4 of indolic ring), s. 3.90 (3H, OCH₃ at C7 of indolic ring), dd. 4.29, 5.03 (J=12.80Hz, 2H, CH₂ of cycle), d. 6.27 (JH₅H₆ = 8.25 Hz 1H, H at C5 of indolic ring), d. 6.54(JH₅H₆ = 8.25 Hz 1H, H at C6 of indolic ring), s. 6.99 (1H, H at C3 of indolic ring), br.d. 7.36 (1H, NH of CO-NH-cycloheptyl)</p> |
| 8 |  | 519,6465 | <p>LC MS, m/z: 520. (M+1). ¹H NMR: m. 1.16-1.67 (15H, CH of cycloheptyl and CH₃ of cycle), m. 3.55-3.65 (1H, CH of cycloheptyl), s. 3.77 (3H, OCH₃ at m-MeOPh), s. 3.87 (3H, OCH₃ at C4 of indolic ring), s. 3.90 (3H, OCH₃ at C7 of indolic ring), dd. 4.19, 5.13 (J=13.20Hz, 2H, CH₂ of cycle), dd. 4.24, 5.26 (J=16.10 Hz, 2H, N-CH₂-Ph) d. 6.29 (JH₅H₆ = 8.05 Hz 1H, H at C5 of indolic ring), d. 6.54(JH₅H₆ = 8.05 Hz 1H, H at C6 of indolic ring), d. 6.72 (J=8.7Hz, 1H, CH of m-MeOPh), m. 6.82-6.85 (2H, 2CH of m-MeOPh), s. 7.07(1H, CH at C3 of indolic ring), m. 7.12-7.21 (2H, CH of m-MeOPh and NH of CO-NH-cycloheptyl)</p> |
| 9 |  | 463,5569 | 464 |

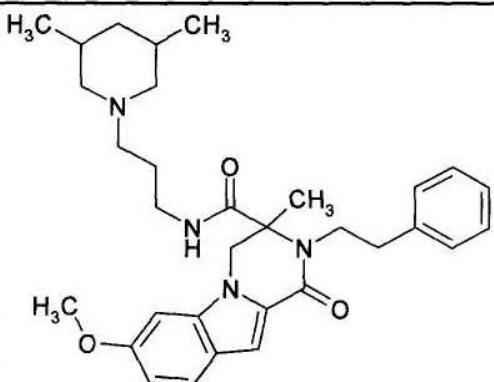
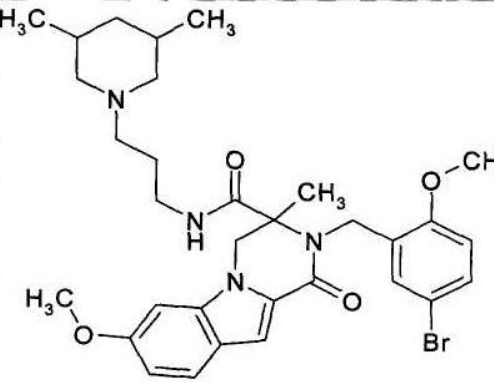
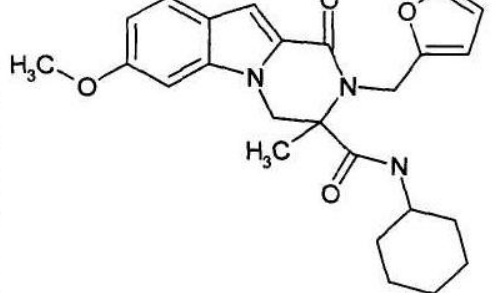
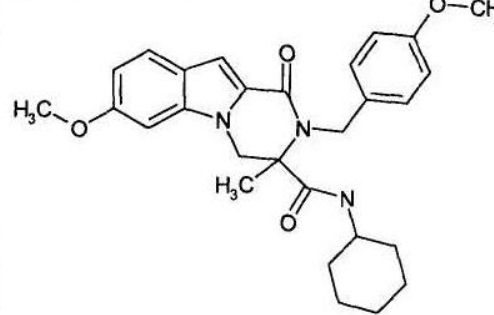
| | | | |
|----|---|----------|--|
| 10 |  | 513,5648 | 514 |
| 11 |  | 480,0115 | LC MS, m/z: 481. (M+1). ¹ H NMR: m. 1.06-1.70 (15H, CH of cycloheptyl and CH ₃ of cycle), m. 3.58-3.61 (1H, CH of cycloheptyl), s. 3.86 (3H, OCH ₃ at C6 of indolic ring), dd 4.22, 5.09 (J=12.85Hz, 2H, CH ₂ of cycle), d. 6.69 (JH ₄ H ₅ = 8.75Hz, 1H, CH at C5 of indolic ring), s. 6.85 (1H, CH at C7 of indolic ring), br.s. 6.92 (JH ₃ H ₄ ~2.2Hz, 1H, CH at C3 of indolic ring), m. 7.35-7.44 (4H, 4CH of p-ClPh), br.d. 7.49 (JH ₄ H ₅ = 8.75Hz, JH ₃ H ₄ ~2.2Hz, 1H, CH at C4 of indolic ring) br.d. 7.30 (J=7.60Hz, 1H, NH of CO-NH-cycloheptyl) |
| 12 |  | 480,0115 | 481 |
| 13 |  | 446,5540 | 447 |

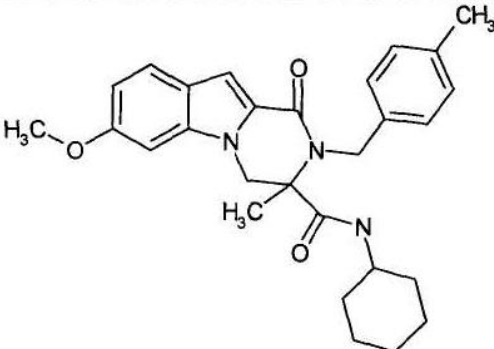
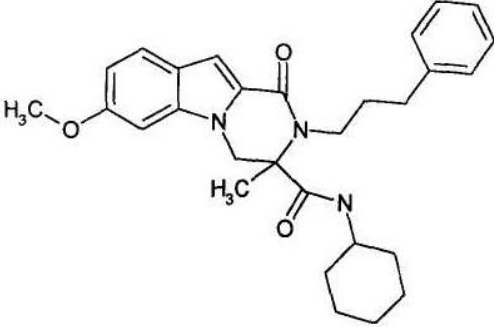
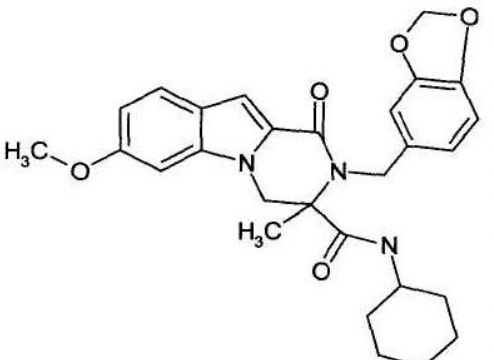
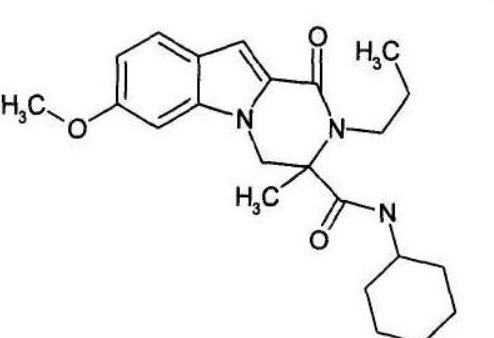
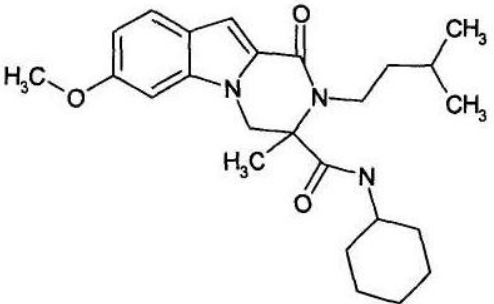
| | | | |
|----|---|----------|-----|
| 14 |  | 445,5664 | 446 |
| 15 |  | 480,0115 | 481 |
| 16 |  | 480,0115 | 481 |
| 17 |  | 494,0385 | 495 |
| 18 |  | 565,16 | 566 |

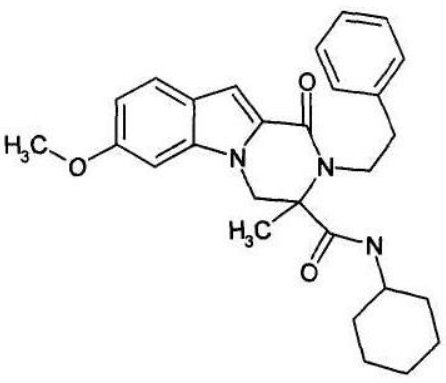
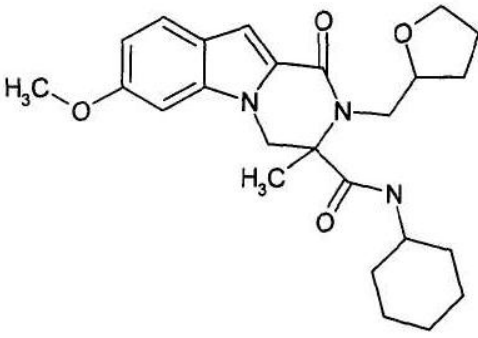
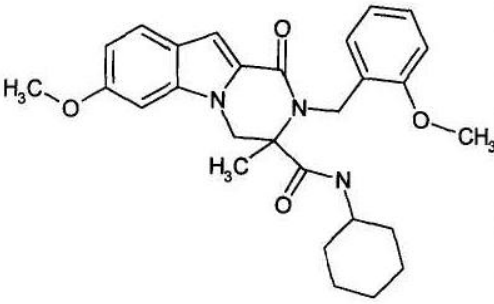
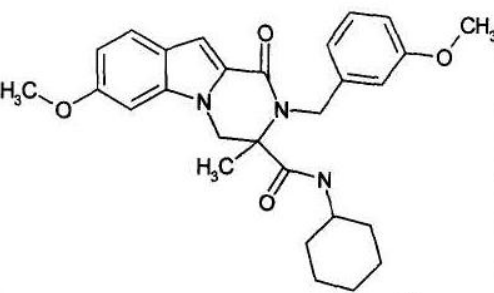
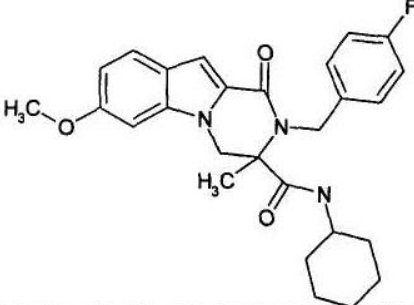
545


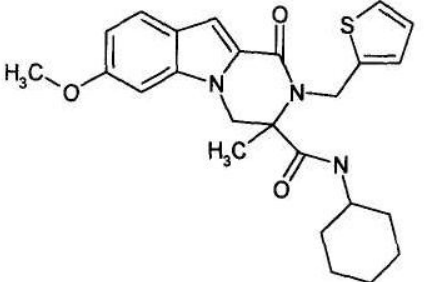
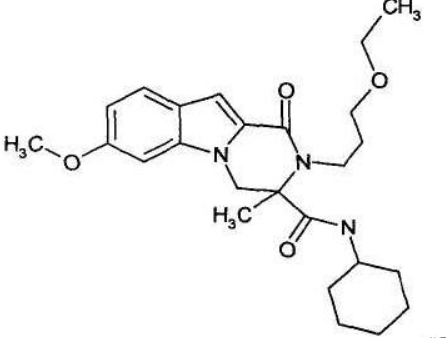
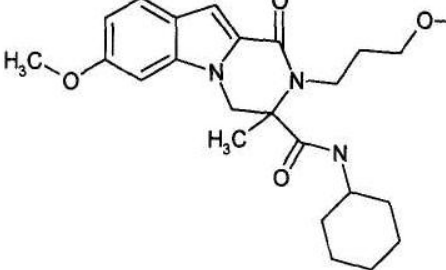
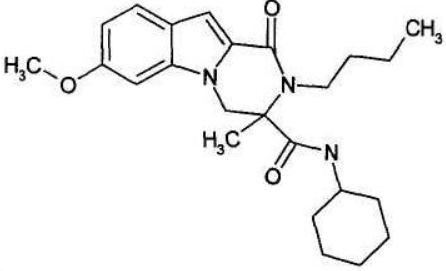
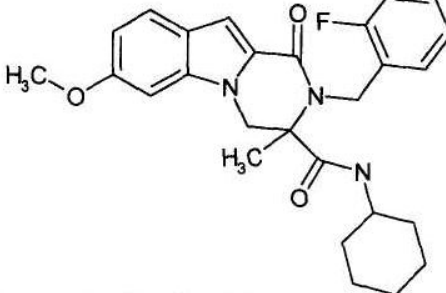
84447

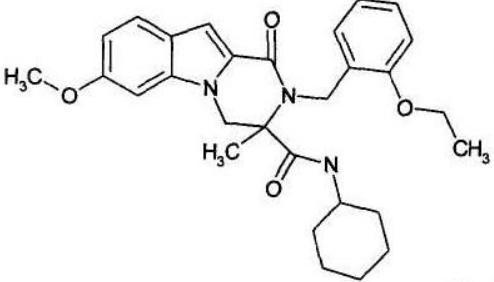
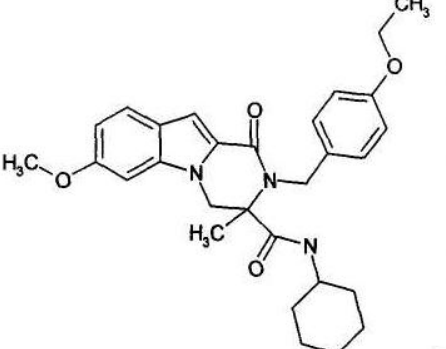
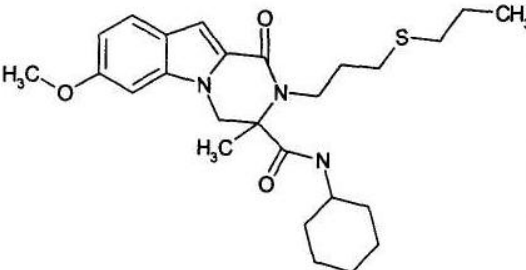
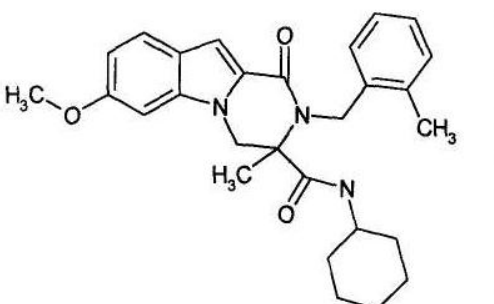
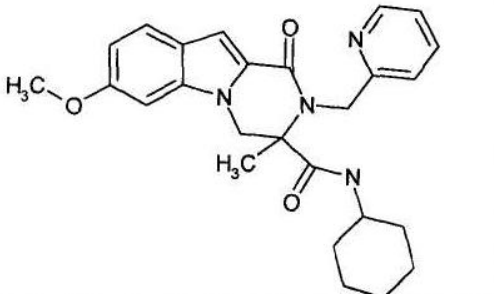
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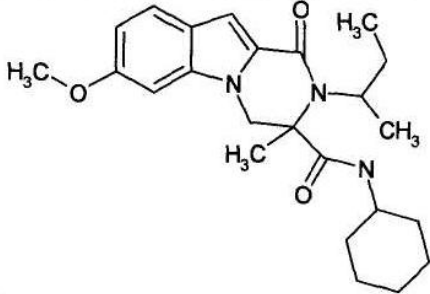
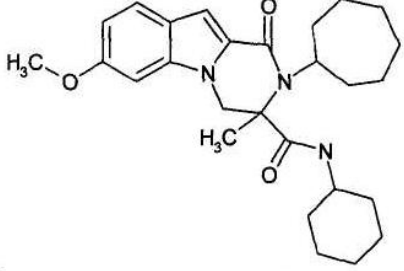
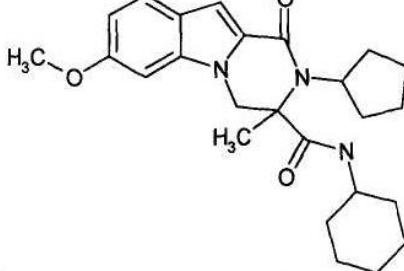
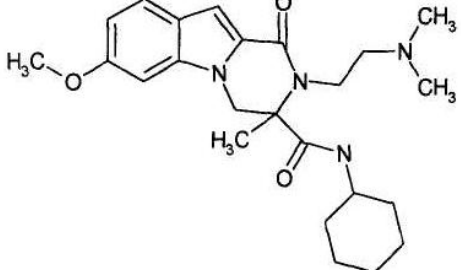
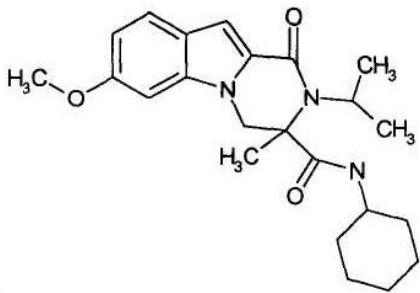
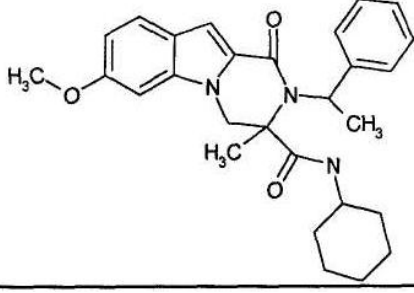
| | | | |
|----|---|----------|-----|
| 19 |  | 530,72 | 531 |
| 20 |  | 625,61 | 626 |
| 21 |  | 435,5276 | 436 |
| 22 |  | 475,5929 | 476 |

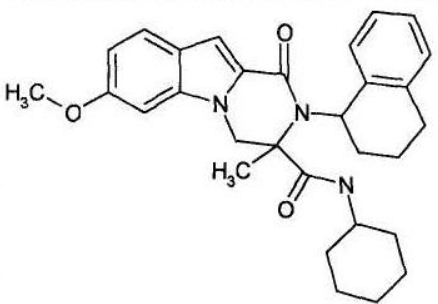
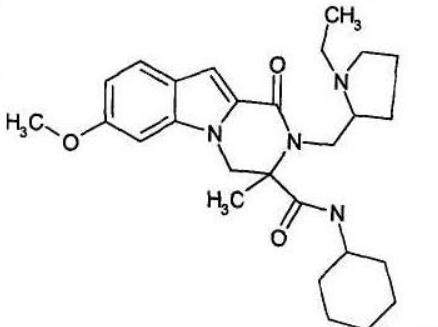
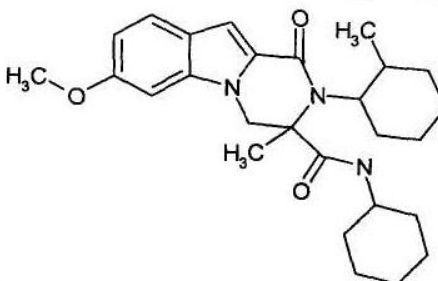
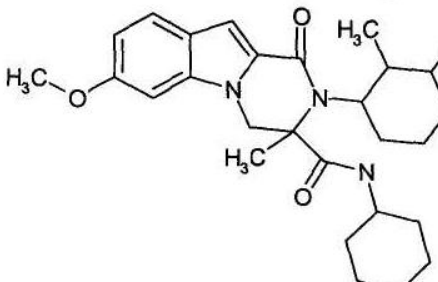
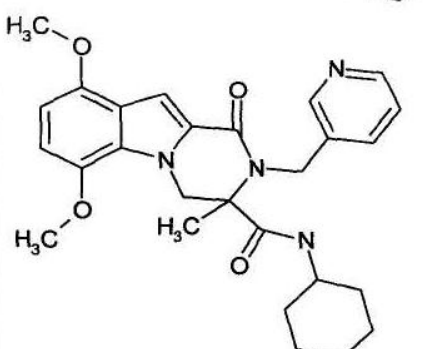
| | | | |
|----|---|----------|-----|
| 23 |  | 459,5935 | 460 |
| 24 |  | 473,6206 | 474 |
| 25 |  | 489,5764 | 490 |
| 26 |  | 397,5218 | 398 |
| 27 |  | 425,5760 | 426 |

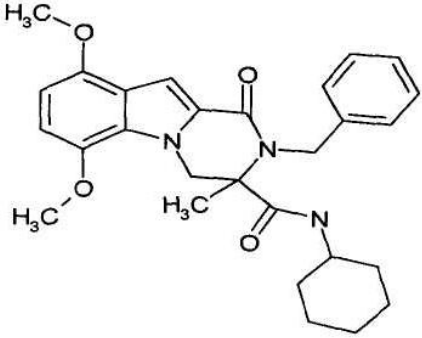
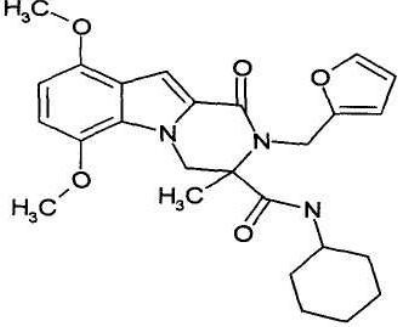
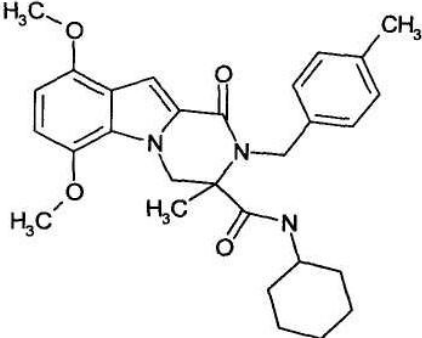
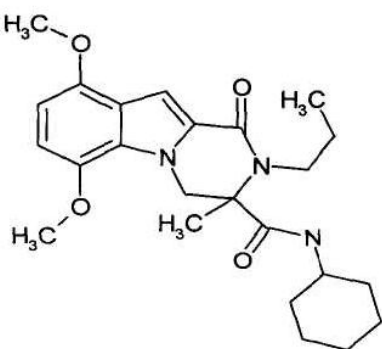
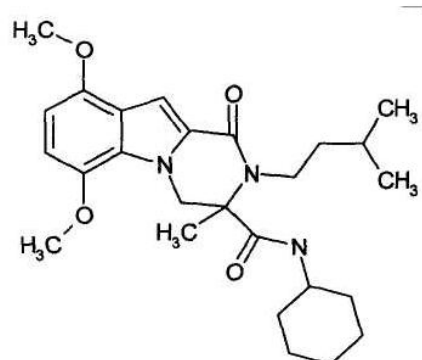
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|----|---|----------|-----|
| 28 |  | 459,5935 | 460 |
| 29 |  | 439,5595 | 440 |
| 30 |  | 475,5929 | 476 |
| 31 |  | 475,5929 | 476 |
| 32 |  | 463,5569 | 464 |

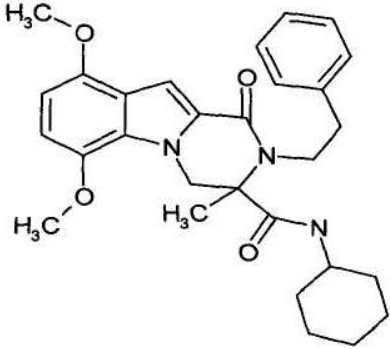
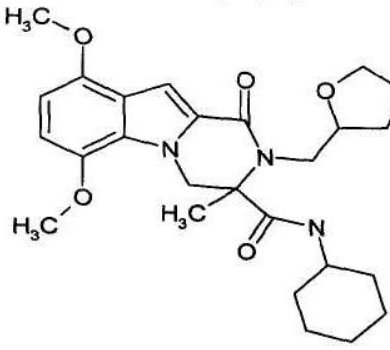
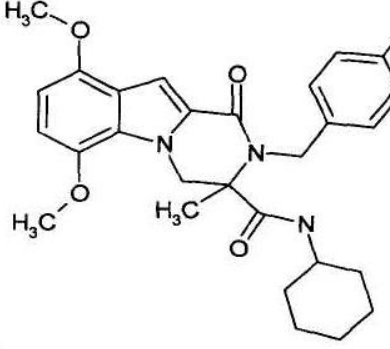
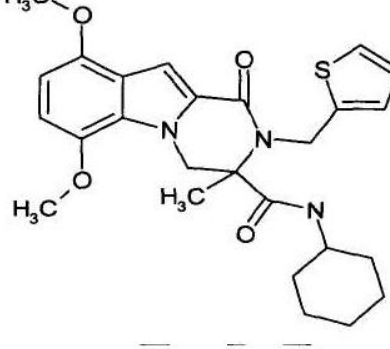
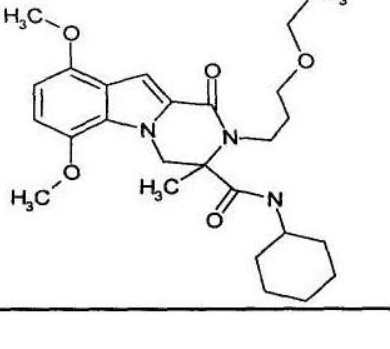
| | | | |
|----|---|----------|-----|
| 33 |  | 473,6206 | 474 |
| 34 |  | 451,5922 | 452 |
| 35 |  | 441,5754 | 442 |
| 36 |  | 427,5483 | 428 |
| 37 |  | 411,5489 | 412 |
| 38 |  | 463,5569 | 464 |

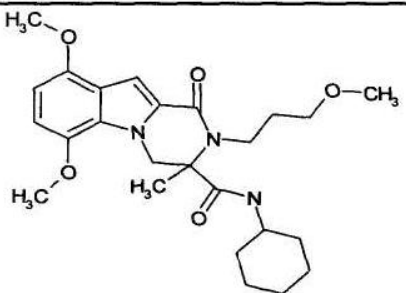
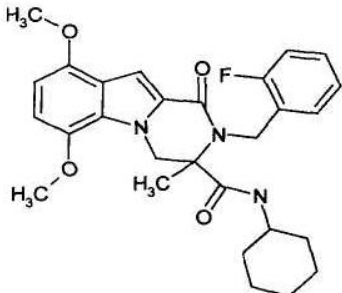
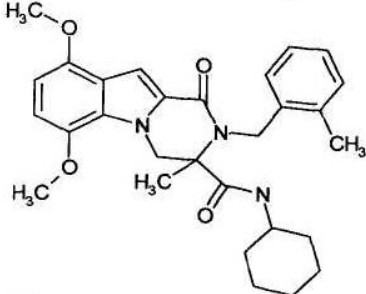
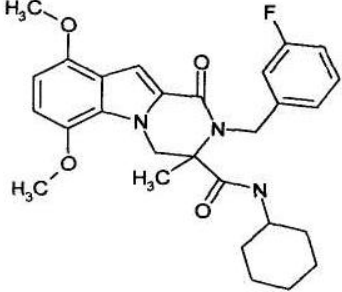
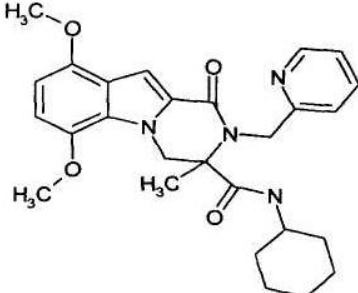
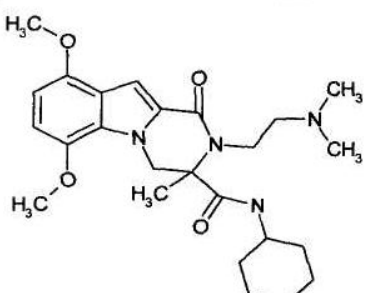
| | | | |
|----|---|----------|-----|
| 39 |  | 489,6200 | 490 |
| 40 |  | 489,6200 | 490 |
| 41 |  | 471,6671 | 472 |
| 42 |  | 459,5935 | 460 |
| 43 |  | 446,5540 | 447 |

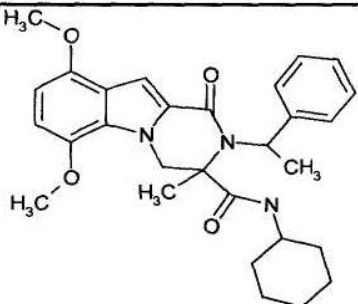
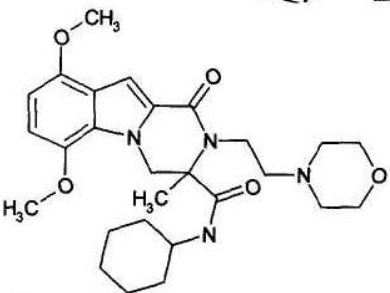
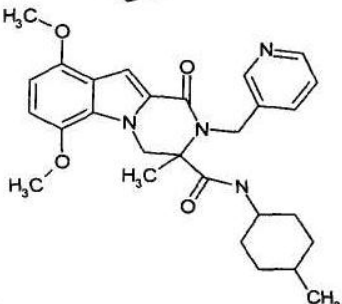
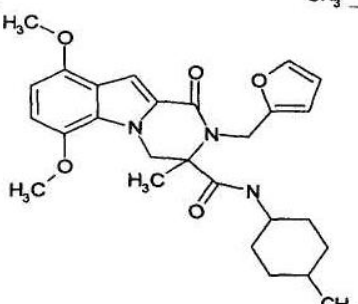
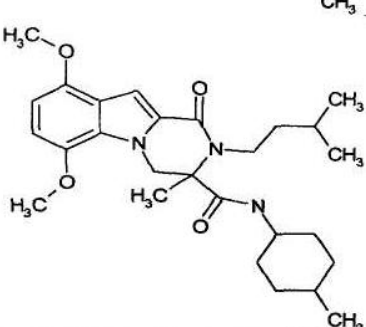
| | | | |
|----|---|----------|-----|
| 44 |  | 411,5489 | 412 |
| 45 |  | 451,6142 | 452 |
| 46 |  | 423,5601 | 424 |
| 47 |  | 426,5636 | 427 |
| 48 |  | 397,5218 | 398 |
| 49 |  | 459,5935 | 460 |

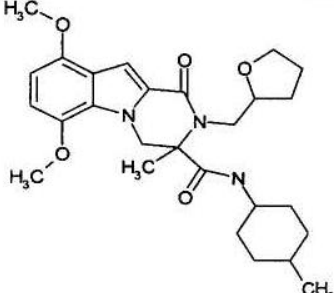
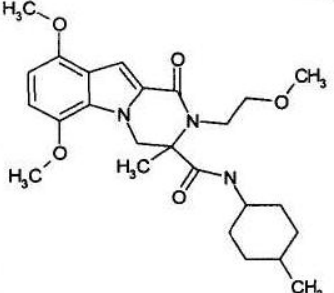
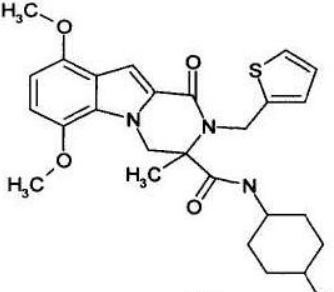
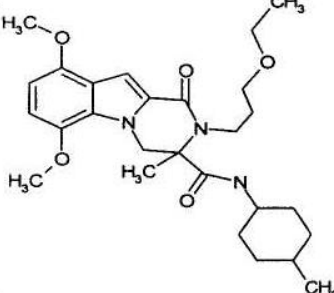
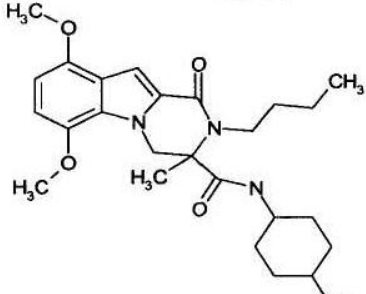
| | | | |
|----|---|----------|-----|
| 50 |  | 485,6318 | 486 |
| 51 |  | 466,6289 | 467 |
| 52 |  | 451,6142 | 452 |
| 53 |  | 465,6413 | 466 |
| 54 |  | 476,5805 | 477 |

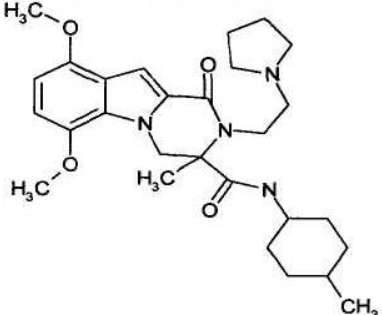
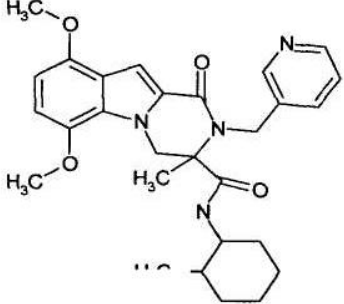
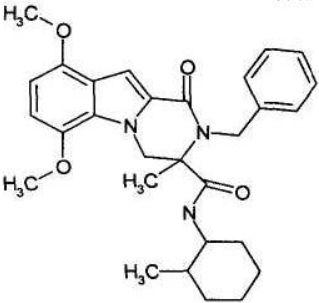
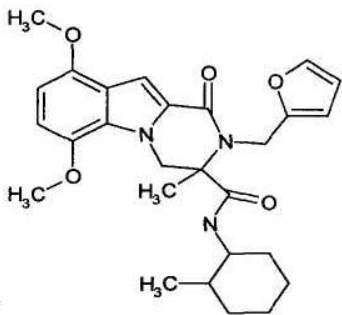
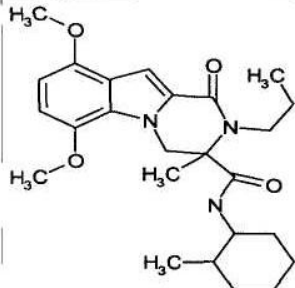
| | | | |
|----|---|----------|-----|
| 55 |  | 475,5929 | 476 |
| 56 |  | 465,5541 | 466 |
| 57 |  | 489,6200 | 490 |
| 58 |  | 427,5483 | 428 |
| 59 |  | 455,6025 | 456 |

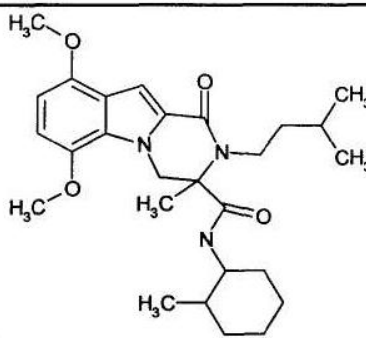
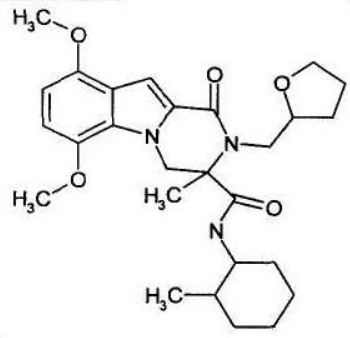
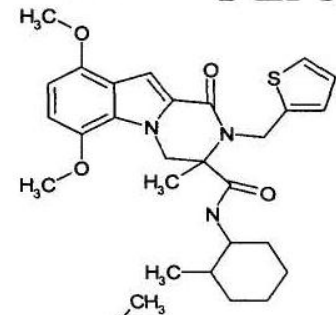
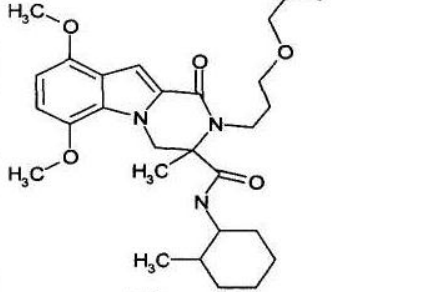
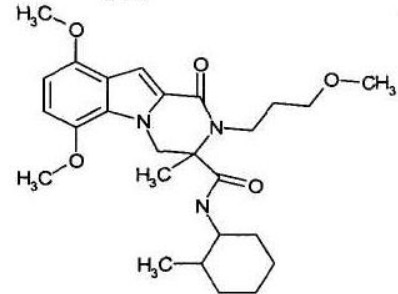
| | | | |
|----|---|----------|-----|
| 60 |  | 489,6200 | 491 |
| 61 |  | 469,5860 | 470 |
| 62 |  | 493,5833 | 494 |
| 63 |  | 481,6187 | 482 |
| 64 |  | 471,6019 | 472 |

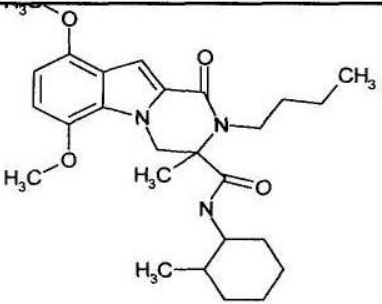
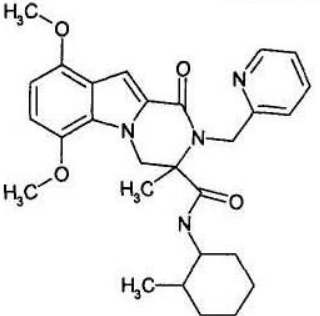
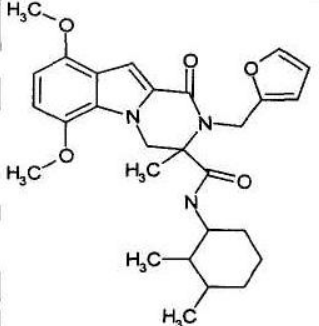
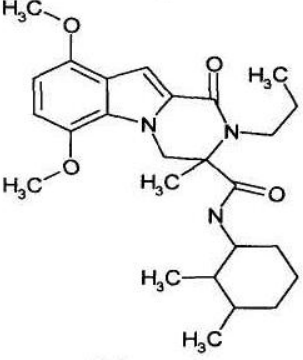
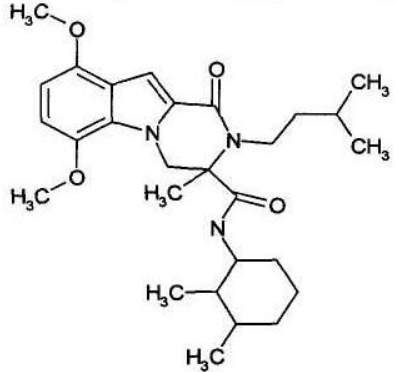
| | | | |
|----|---|----------|-----|
| 65 |  | 457,5748 | 458 |
| 66 |  | 493,5833 | 494 |
| 67 |  | 489,6200 | 490 |
| 68 |  | 493,5833 | 494 |
| 69 |  | 476,5805 | 477 |
| 70 |  | 456,5901 | 457 |

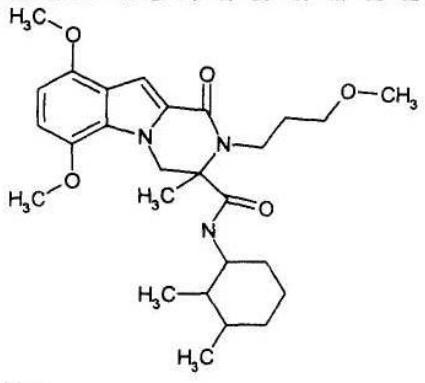
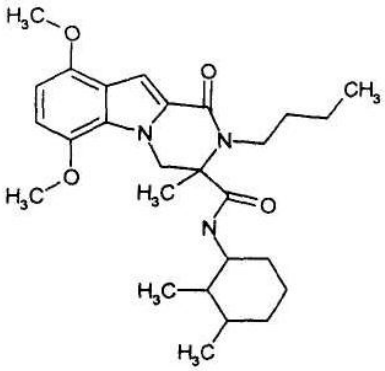
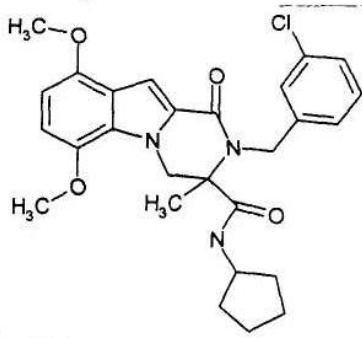
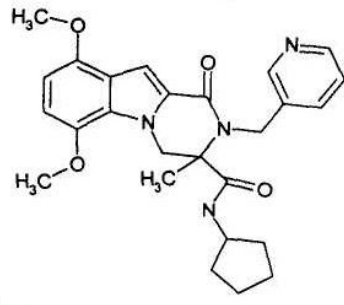
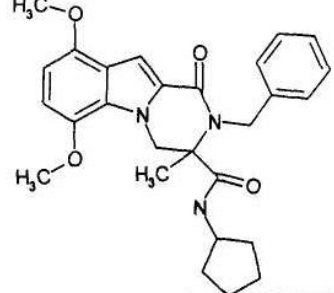
| | | | |
|----|---|----------|-----|
| 71 |  | 489,6200 | 490 |
| 72 |  | 498,6277 | 499 |
| 73 |  | 490,6076 | 491 |
| 74 |  | 479,5812 | 480 |
| 75 |  | 469,6296 | 470 |

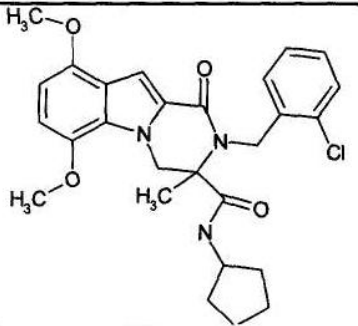
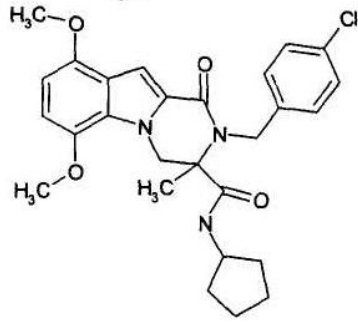
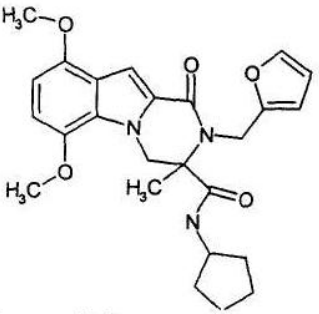
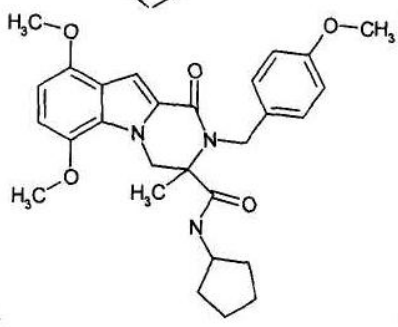
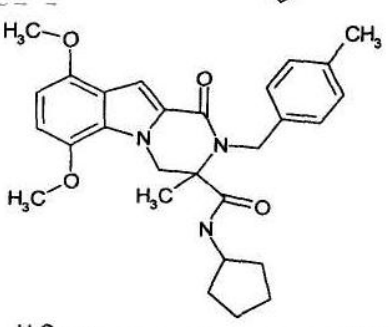
| | | | |
|----|---|----------|-----|
| 76 |  | 483,6130 | 484 |
| 77 |  | 457,5748 | 458 |
| 78 |  | 495,6458 | 496 |
| 79 |  | 485,6290 | 486 |
| 80 |  | 455,6025 | 456 |

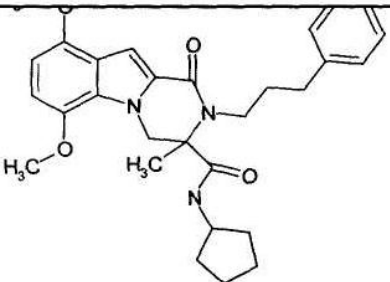
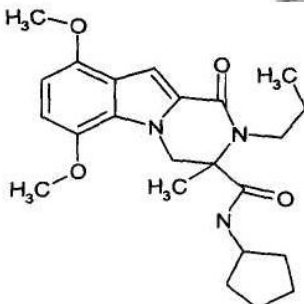
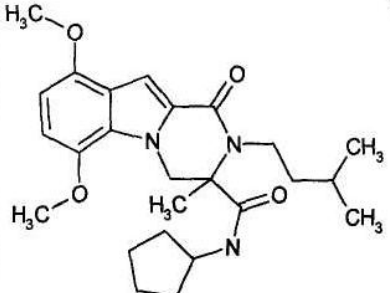
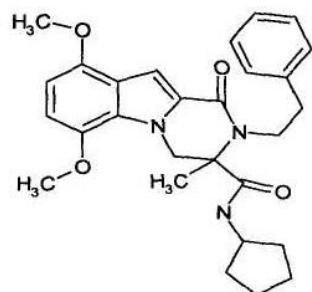
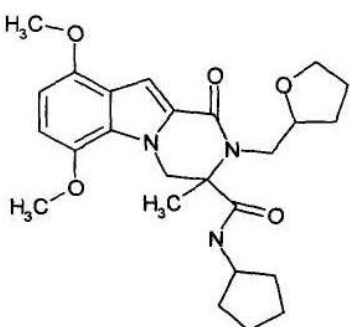
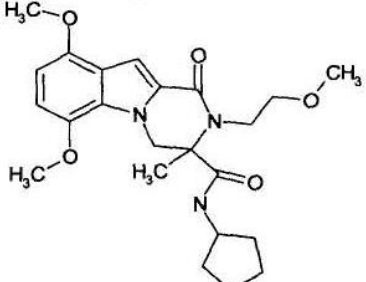
| | | | |
|----|---|----------|-----|
| 81 |  | 496,6554 | 497 |
| 82 |  | 490,6076 | 491 |
| 83 |  | 489,6200 | 490 |
| 84 |  | 479,5812 | 480 |
| 85 |  | 441,5754 | 442 |

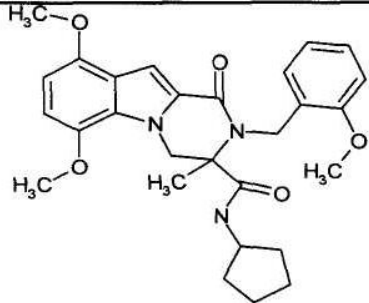
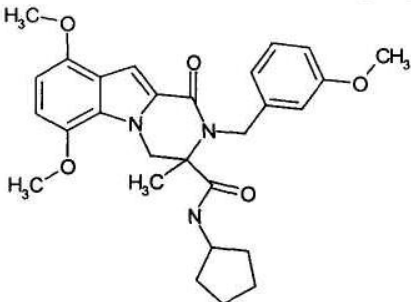
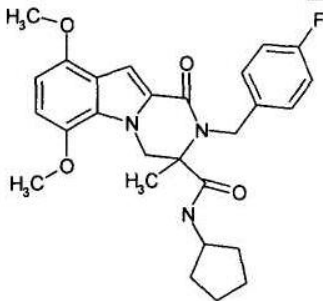
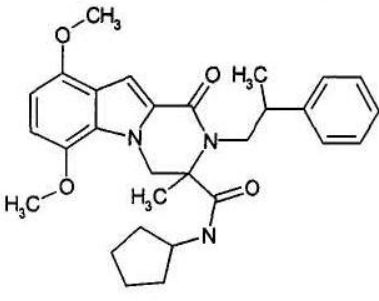
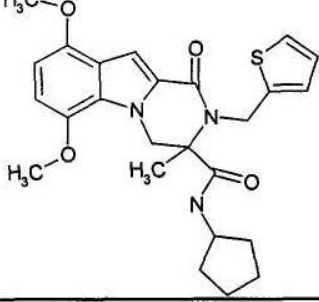
| | | | |
|----|---|----------|-----|
| 86 |  <chem>CC(C)CN1C(=O)N(C2CCCCC2C)C(=O)C1c3cc(OC)c(OC)cc3</chem> | 469,6296 | 470 |
| 87 |  <chem>CC1CCCCC1N(C(=O)N2C(=O)N(C3CCCCC3C)C(=O)C2)c4cc(OC)c(OC)cc4</chem> | 483,6130 | 484 |
| 88 |  <chem>CC1CCCCC1N(C(=O)N2C(=O)N(C3CCCCC3C)C(=O)C2)c4cc(OC)c(OC)cc4</chem> | 495,6458 | 496 |
| 89 |  <chem>CC1CCCCC1N(C(=O)N2C(=O)N(C3CCCCC3C)C(=O)C2)c4cc(OC)c(OC)cc4</chem> | 485,6290 | 486 |
| 90 |  <chem>CC1CCCCC1N(C(=O)N2C(=O)N(C3CCCCC3C)C(=O)C2)c4cc(OC)c(OC)cc4</chem> | 471,6019 | 472 |

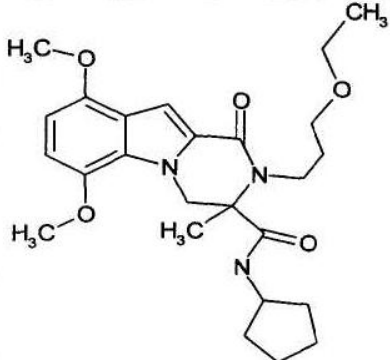
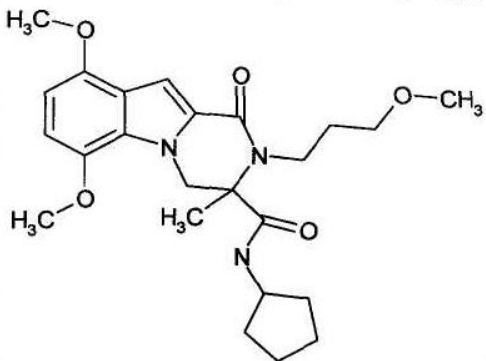
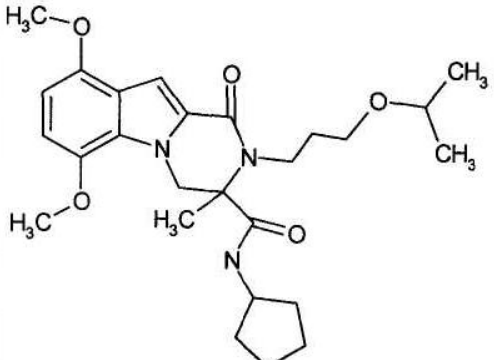
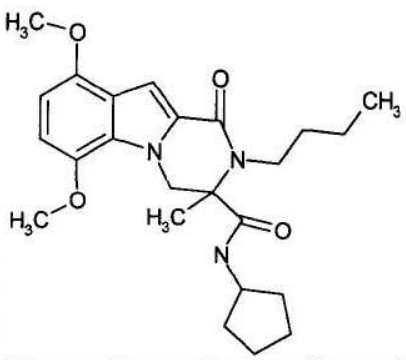
| | | | |
|----|---|----------|-----|
| 91 |  | 455,6025 | 456 |
| 92 |  | 490,6076 | 491 |
| 93 |  | 493,6083 | 494 |
| 94 |  | 455,6025 | 456 |
| 95 |  | 483,6567 | 484 |

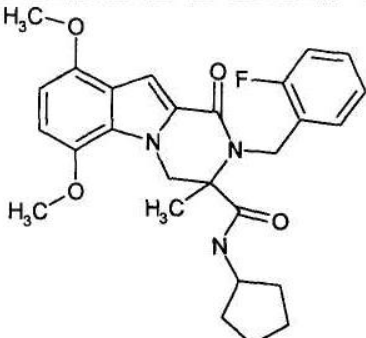
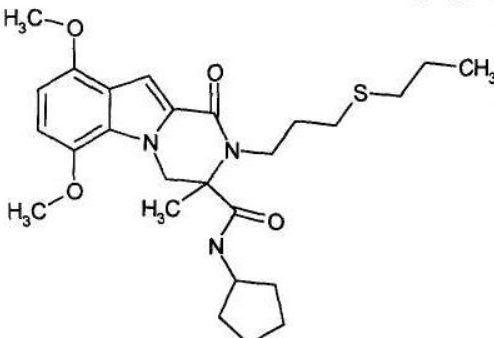
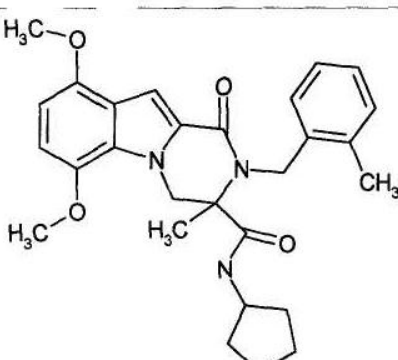
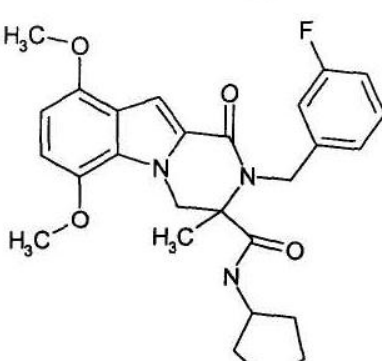
| | | | |
|-----|---|----------|-----|
| 96 |  | 485,6290 | 486 |
| 97 |  | 469,6296 | 470 |
| 98 |  | 496,0109 | 497 |
| 99 |  | 462,5534 | 463 |
| 100 |  | 461,5658 | 462 |

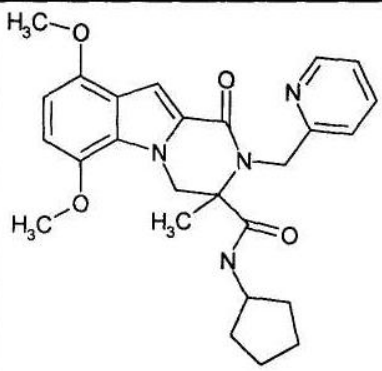
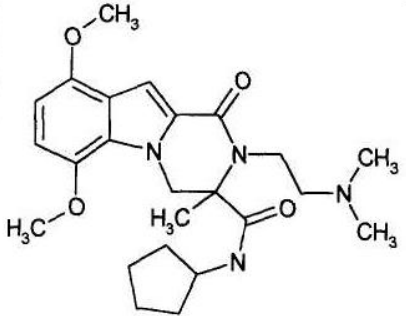
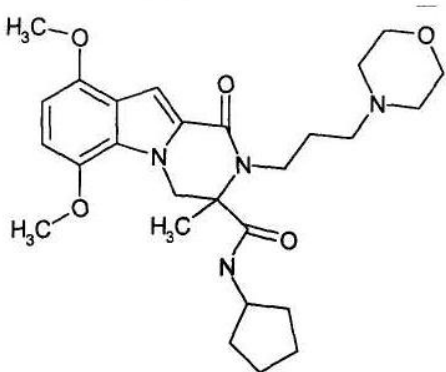
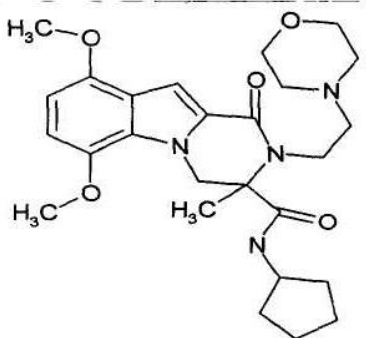
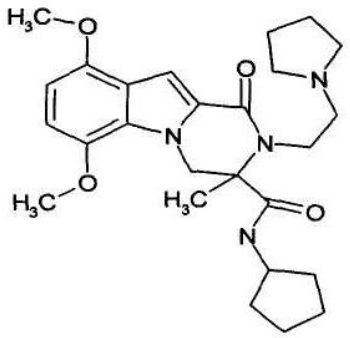
| | | | |
|-----|---|----------|-----|
| 101 |  | 496,0109 | 497 |
| 102 |  | 496,0109 | 497 |
| 103 |  | 451,5270 | 452 |
| 104 |  | 491,5923 | 492 |
| 105 |  | 475,5929 | 476 |

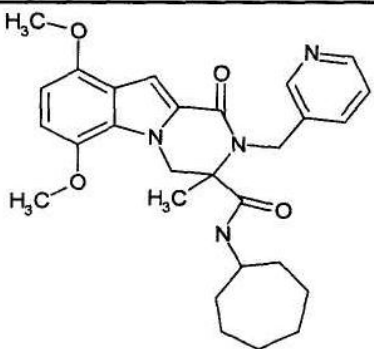
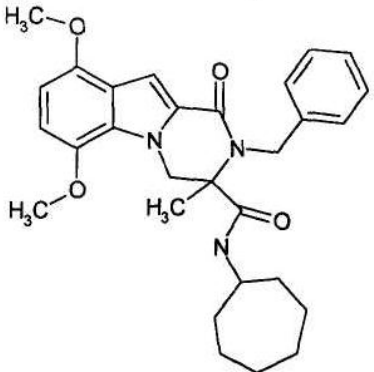
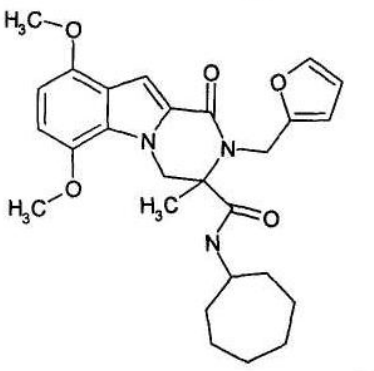
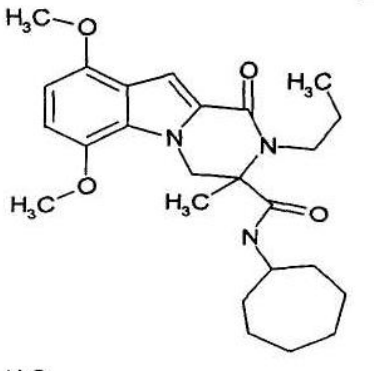
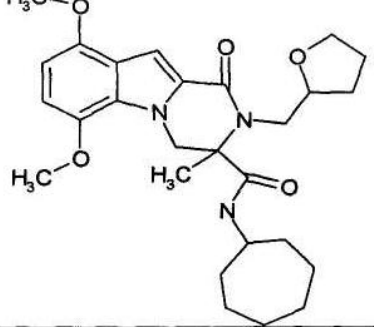
| | | | |
|-----|---|----------|-----|
| 106 |  | 489,6200 | 490 |
| 107 |  | 413,5212 | 414 |
| 108 |  | 441,5754 | 442 |
| 109 |  | 475,5929 | 476 |
| 110 |  | 455,5589 | 456 |
| 111 |  | 429,5206 | 430 |

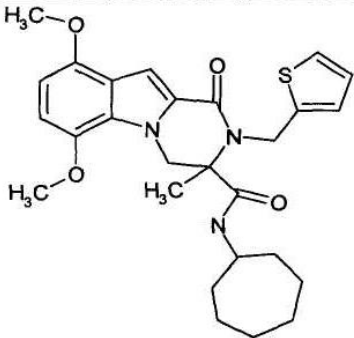
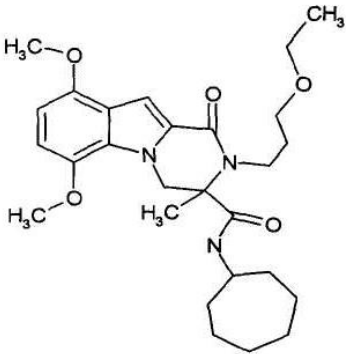
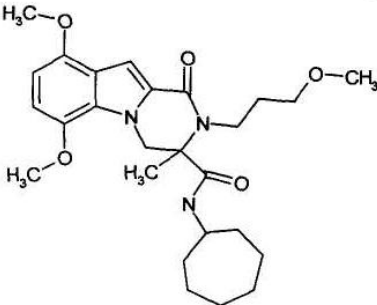
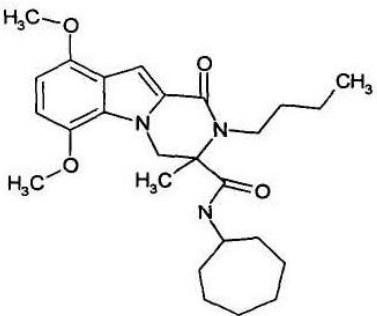
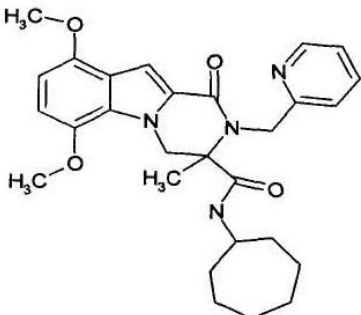
| | | | |
|-----|---|----------|-----|
| 112 |  | 491,5923 | 492 |
| 113 |  | 491,5923 | 492 |
| 114 |  | 479,5563 | 480 |
| 115 |  | 489,6200 | 490 |
| 116 |  | 467,5916 | 468 |

| | | | |
|-----|---|----------|-----|
| 117 |  | 457,5748 | 458 |
| 118 |  | 443,5477 | 444 |
| 119 |  | 471,6019 | 472 |
| 120 |  | 427,5483 | 428 |

| | | | |
|-----|---|----------|-----|
| 121 |  | 479,5563 | 480 |
| 122 |  | 487,6665 | 488 |
| 123 |  | 475,5929 | 476 |
| 124 |  | 479,5563 | 480 |

| | | | |
|-----|---|----------|-----|
| 125 |  <chem>COC1=CC=C2C(=C1)N(C(=O)N(C3CCCC3)C4CCCC4)CCN(C5=CC=CC=N5)C2=CC=C3C=C(C=C3)OC</chem> | 462,5534 | 463 |
| 126 |  <chem>COC1=CC=C2C(=C1)N(C(=O)N(C)C)CCN(C3CCCC3)C2=CC=C3C=C(C=C3)OC</chem> | 442,5630 | 443 |
| 127 |  <chem>COC1=CC=C2C(=C1)N(C(=O)N(C3CCCC3)C4CCCC4)CCN(CCCN5CCOCC5)C2=CC=C3C=C(C=C3)OC</chem> | 498,6277 | 499 |
| 128 |  <chem>COC1=CC=C2C(=C1)N(C(=O)N(C3CCCC3)C4CCCC4)CCN(C5CCOCCN5)C2=CC=C3C=C(C=C3)OC</chem> | 484,6006 | 485 |
| 129 |  <chem>COC1=CC=C2C(=C1)N(C(=O)N(C3CCCC3)C4CCCC4)CCN(C5CCCN5)C2=CC=C3C=C(C=C3)OC</chem> | 468,6012 | 469 |

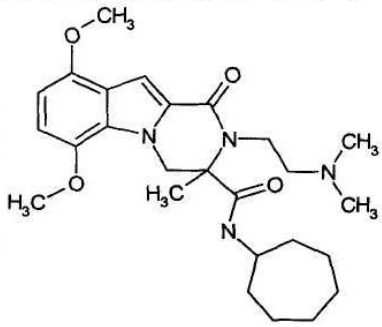
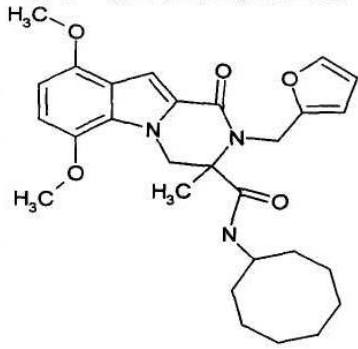
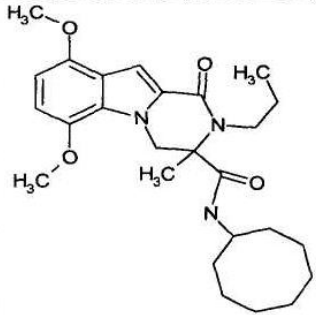
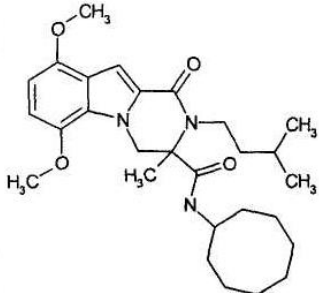
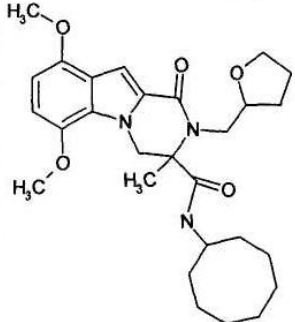
| | | | |
|-----|---|----------|-----|
| 130 |  | 490,6076 | 491 |
| 131 |  | 489,6200 | 490 |
| 132 |  | 479,5812 | 480 |
| 133 |  | 441,5754 | 442 |
| 134 |  | 483,6130 | 484 |

| | | | |
|-----|---|----------|-----|
| 135 |  | 495,6458 | 496 |
| 136 |  | 485,6290 | 486 |
| 137 |  | 471,6019 | 472 |
| 138 |  | 455,6025 | 456 |
| 139 |  | 490,6076 | 491 |

593

84447

594

| | | | |
|-----|---|----------|-----|
| 140 |  | 470,6172 | 471 |
| 141 |  | 493,6083 | 494 |
| 142 |  | 455,6025 | 456 |
| 143 |  | 483,6567 | 484 |
| 144 |  | 497,6401 | 498 |

595

84447

596

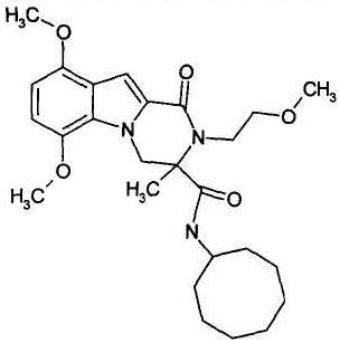
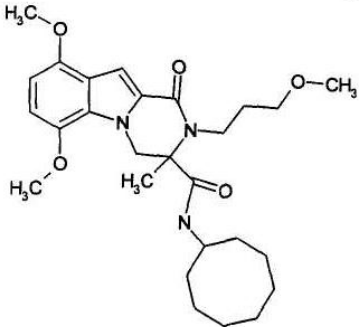
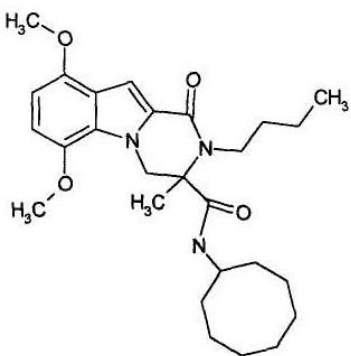
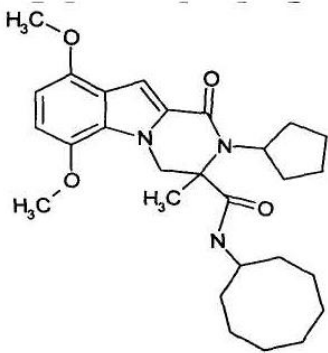
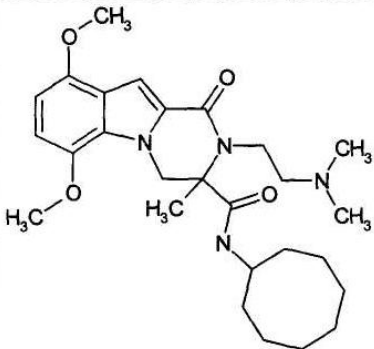
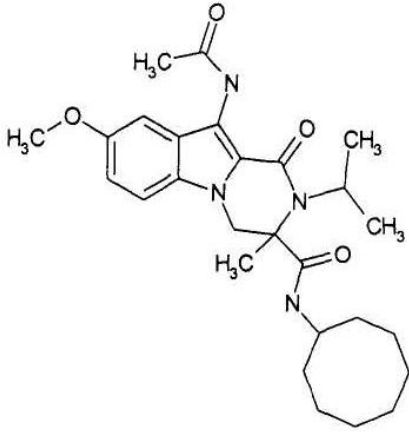
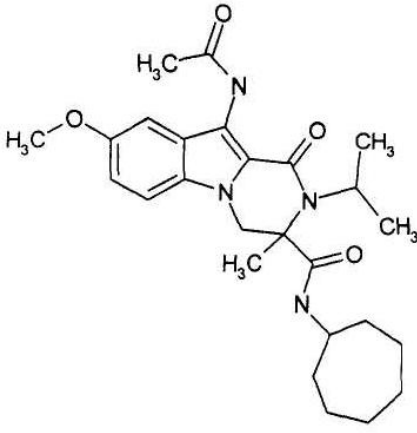
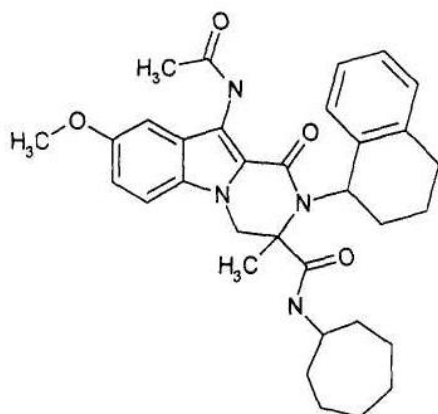
| | | | |
|-----|---|----------|-----|
| 145 |  | 471,6019 | 472 |
| 146 |  | 485,6290 | 486 |
| 147 |  | 469,6296 | 470 |
| 148 |  | 481,6407 | 482 |
| 149 |  | 484,6443 | 485 |

Таблица 1.10(2)

| № п.п | Формула | Мол. масса | Мас-спектр, m/z ($M+1$), ПМР спектр |
|-------|---|------------|---|
| 1 |  | 482,6283 | <p>LC MS, m/z: 483 ($M+1$). 1H NMR: s. 1.51 (3H, CH_3 at C3 of 1,2,3,4-tetrahydropyrazino[1,2-a]indolic ring), d. 1.57 ($J = 6.60$ Hz, 6H, CH_3 of isopropyl group), m. 1.40 - 1.80 (14H, CH of cyclooctylic ring), s. 2.22 (3H, CH_3 NAc), m. 3.26 ($J = 6.60$ Hz, 1H, CH of isopropyl group), s. 3.82 (3H, OCH₃ at C8 of 1,2,3,4-tetrahydropyrazino[1,2-a]indolic ring), m. 3.85 - 3.94 (1H, CH at C1 of cyclooctylic ring), d. 4.15 ($J = 12.00$ Hz, 1H, CH at C4 of 1,2,3,4-tetrahydropyrazino[1,2-a]indolic ring), d. 4.29 ($J = 12.00$ Hz, 1H, CH at C4 of 1,2,3,4-tetrahydropyrazino[1,2-a]indolic ring), dd. 6.88 ($J_{H6H7} = 8.95$ Hz, $J_{H7H9} = 3.00$ Hz, 1H, CH at C7 of 1,2,3,4-tetrahydropyrazino[1,2-a]indolic ring), d. 7.21 ($J_{H6H7} = 8.95$ Hz, 1H, CH at C6 of 1,2,3,4-tetrahydropyrazino[1,2-a]indolic ring), d. 7.64 ($J_{H7H9} = 3.00$ Hz, 1H, CH at C9 of 1,2,3,4-tetrahydropyrazino[1,2-a]indolic ring), d. 7.95 ($J = 8.00$ Hz, 1H, NH at cyclooctylic ring), s. 9.93 (1H, NH of NAc)</p> |
| 2 |  | 468,6012 | <p>LC MS, m/z: 469 ($M+1$). 1H NMR: s. 1.51 (3H, CH_3 at C3 of 1,2,3,4-tetrahydropyrazino[1,2-a]indolic ring), d. 1.56 ($J = 6.2$ Hz, 6H, CH_3 of isopropyl group), m. 1.4 - 1.8 (12H, CH of cycloheptylic ring), s. 2.21 (3H, CH_3 NAc), m. 3.25 ($J = 6.2$ Hz, 1H, CH of isopropyl group), s. 3.81 (3H, OCH₃ at C8 of 1,2,3,4-tetrahydropyrazino[1,2-a]indolic ring), m. 3.75 - 3.89 (1H, CH at C1 of cycloheptylic ring), d. 4.17 ($J = 11.75$ Hz, 1H, CH at C4 of 1,2,3,4-tetrahydropyrazino[1,2-a]indolic ring), d. 4.28 ($J = 11.75$ Hz, 1H, CH at C4 of 1,2,3,4-tetrahydropyrazino[1,2-a]indolic ring), dd. 6.88 ($J_{H6H7} = 9.35$ Hz, $J_{H7H9} = 2.00$ Hz, 1H, CH at C7 of 1,2,3,4-tetrahydropyrazino[1,2-a]indolic ring), d. 7.23 ($J_{H6H7} = 9.35$ Hz, 1H, CH at C6 of 1,2,3,4-tetrahydropyrazino[1,2-a]indolic ring), d. 7.61 ($J_{H7H9} = 2.00$ Hz, 1H, CH at C9 of 1,2,3,4-tetrahydropyrazino[1,2-a]indolic ring), d. 8.01 ($J = 8.1$ Hz, 1H, NH at cycloheptylic ring), s. 9.92 (1H, NH of NAc)</p> |

3

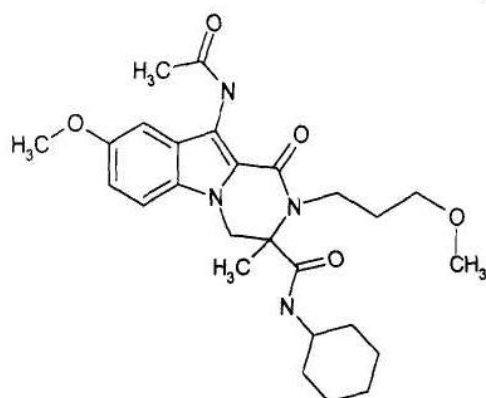


556,7112

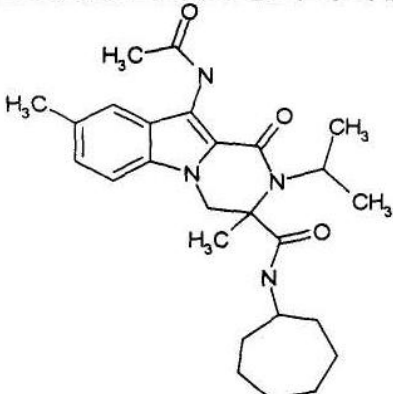
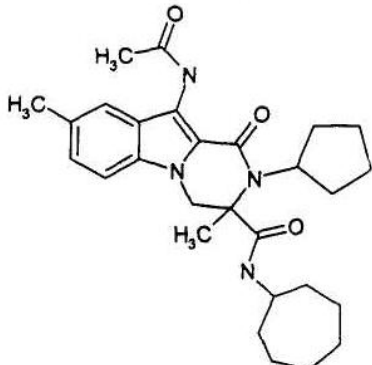
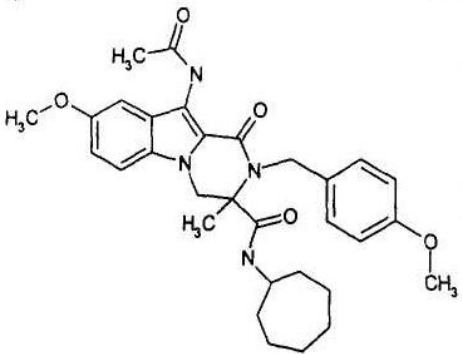
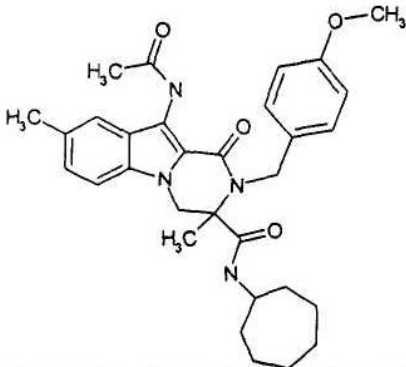
LC MS, m/z: 557 (M+1). ¹H NMR: m. 1.12 - 1.90 (12H, CH of cyclohexylic or cycloheptylic ring), s. 1.81 (3H, CH₃ at C3 of 1,2,3,4-tetrahydropyrazino[1,2-a]indolic ring), s. 2.11 (3H, CH₃ NAc), m. 2.00 - 2.26 (2H, CH of cyclohexylic or cycloheptylic ring), m. 2.66 - 2.83 (2H CH of cyclohexylic or cycloheptylic ring), m. 2.83 - 3.04 (2H CH of cyclohexylic or cycloheptylic ring), m. 3.61 - 3.72 (1H, CH at C1 of cycloheptylic ring), s. 3.81 (3H, OCH₃ at C8 of 1,2,3,4-tetrahydropyrazino[1,2-a]indolic ring), d. 4.23 (J = 12.10 Hz, 1H, CH at C4 of 1,2,3,4-tetrahydropyrazino[1,2-a]indolic ring), m. 4.50 - 4.60 (1H, CH at C1 of cyclohexylic ring), d. 4.87 (J = 12.10 Hz, 1H, CH at C4 of 1,2,3,4-tetrahydropyrazino[1,2-a]indolic ring), br. d. 6.90 (JH6H7 = 8.80 Hz, JH7H9 ~ 2.00 Hz, 1H, CH at C7 of 1,2,3,4-tetrahydropyrazino[1,2-a]indolic ring), m. 6.96 - 7.06 (3H, CH at phenylic ring), m. 7.10 - 7.15 (1H, CH at phenylic ring), d. 7.22 (JH6H7 = 8.80 Hz, 1H, CH at C6 of 1,2,3,4-tetrahydropyrazino[1,2-a]indolic ring), d. 7.44 (JH7H9 ~ 2.00 Hz, 1H, CH at C9 of 1,2,3,4-tetrahydropyrazino[1,2-a]indolic ring),

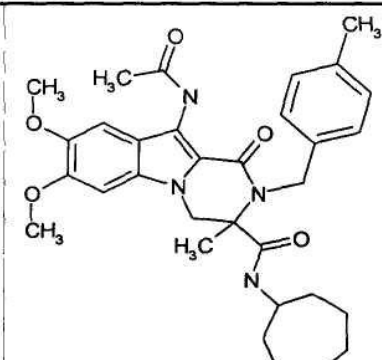
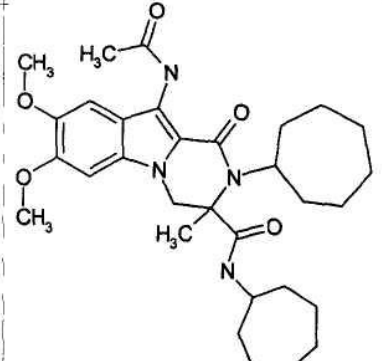
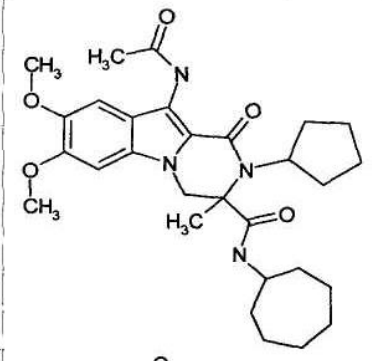
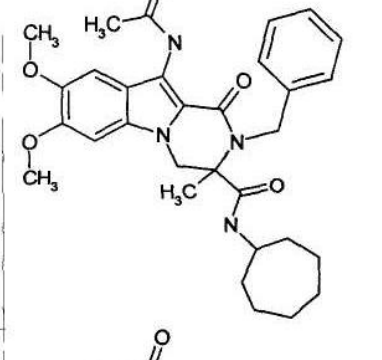
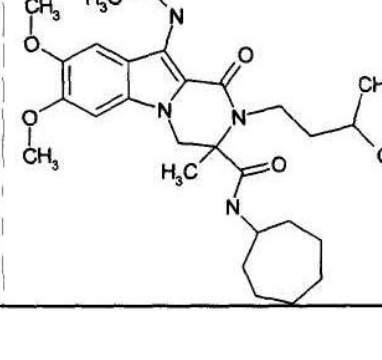
484,6006

4



485

| 601 | 84447 | 602 |
|--|-----------------|------------|
| <p>5</p>  | <p>452,6018</p> | <p>453</p> |
| <p>6</p>  | <p>478,6401</p> | <p>479</p> |
| <p>7</p>  | <p>546,6723</p> | <p>547</p> |
| <p>8</p>  | <p>530,6729</p> | <p>531</p> |

| | | | |
|----|---|----------|--|
| 9 |  | 560,6994 | LC MS, m/z: 561 (M+1). ¹ H NMR: m. 1.10 - 1.71 (12H, CH of cycloheptylic ring), s. 1.49 (3H, CH ₃ at C3 of 1,2,3,4-tetrahydropyrazino[1,2-a]indol-1-one ring), s. 2.19 (3H, CH ₃ of NHCOCH ₃), s. 2.32 (3H, CH ₃ at C4 of CH ₂ C ₆ H ₄ - group), m. 3.55 - 3.67 (1H, CH at C1 of cycloheptylic rin... |
| 10 |  | 552,7201 | LC MS, m/z: 553 (M+1). ¹ H NMR: m. 1.25 - 2.06 (22H, CH of cycloheptylic rings), s. 1.47 (3H, CH ₃ at C3 of 1,2,3,4-tetrahydropyrazino[1,2-a]indol-1-one ring), s. 2.20 (3H, CH ₃ of NHCOCH ₃), m. 2.38 - 2.55 (2H - 1H CH at C1 and 1H CH of cycloheptylic rings), m. 2.76 - 2.94 (1H, CH a... |
| 11 |  | 524,666 | LC MS, m/z: 525 (M+1). ¹ H NMR: m. 1.16 - 2.03 (20H, CH of cycloheptylic and cyclopentyl ring), s. 1.48 (3H, CH ₃ at C3 of 1,2,3,4-tetrahydropyrazino[1,2-a]indol-1-one ring), s. 2.04 (3H, CH ₃ of NHCOCH ₃), s. 3.82 (3H, CH ₃ at OCH ₃ at C5 or C6 of indolic ring), s. 3.85 (3H, CH ₃ at O... |
| 12 |  | 546,6723 | LC MS, m/z: 547 (M+1). ¹ H NMR: m. 1.12 - 1.70 (12H, CH of cycloheptylic ring), s. 1.51 (3H, CH ₃ at C3 of 1,2,3,4-tetrahydropyrazino[1,2-a]indol-1-one ring), s. 2.18 (3H, CH ₃ of NHCOCH ₃), s. 3.82 (3H, CH ₃ at OCH ₃ at C5 or C6 of indolic ring), m. 3.56 - 3.69 (1H, CH at C1 of cyclohe... |
| 13 |  | 526,6819 | LC MS, m/z: 527 (M+1). ¹ H NMR: d. 0.98 (J = 6.00 Hz, 6H, 2 CH ₃ groups of i-butyl group), m. 1.3 - 1.75 (15H - 12H CH of cycloheptylic ring and 3H CH and CH ₂ of i-butyl group), s. 1.57 (3H, CH ₃ at C3 of 1,2,3,4-tetrahydropyrazino[1,2-a]indol-1-one ring), s. 2.19 (3H, CH ₃ of NH... |

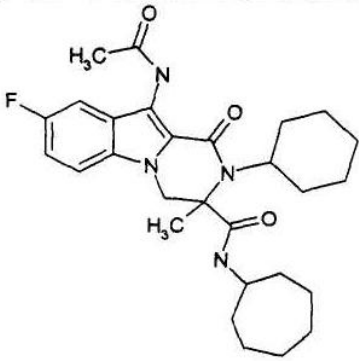
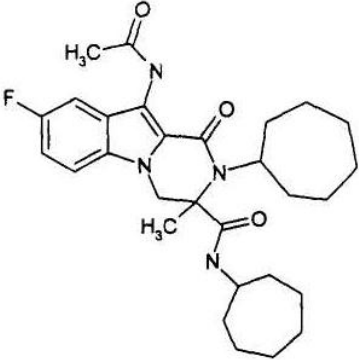
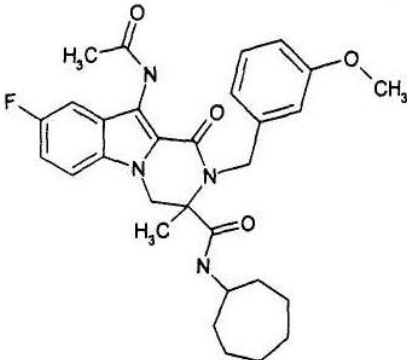
| | | | |
|----|--|----------|---|
| 14 |  | 496,6305 | LC MS, m/z: 4497 (M+1). ¹ H NMR: m. 1.12 - 2.00 (22H, CH ₂ of cyclohexylic and cycloheptylic rings), s. 1.49 (3H, CH ₃ at C3 of 1,2,3,4-tetrahydropyrazino[1,2-a]indol-1-one ring), s. 2.21 (3H, CH ₃ of NHCOCH ₃), m. 2.69 - 2.80 (1H, CH at C1 of cyclohexylic ring), 3.80 - 3.91 (1H, CH at... |
| 15 |  | 510,6576 | LC MS, m/z: 511 (M+1). ¹ H NMR: m. 1.23 - 1.90 (22H, CH ₂ of cycloheptylic rings), s. 1.49 (3H, CH ₃ at C3 of 1,2,3,4-tetrahydropyrazino[1,2-a]indol-1-one ring), m. 1.93 - 2.05 (1H CH of cycloheptylic ring), s. 2.21 (3H, CH ₃ of NHCOCH ₃), m. 2.40 - 2.54 (1H CH of cycloheptylic ring),... |
| 16 |  | 534,6363 | LC MS, m/z: 535 (M+1). ¹ H NMR: m. 1.10 - 1.67 (12H, CH ₂ of cycloheptylic rings), s. 1.58 (3H, CH ₃ at C3 of 1,2,3,4-tetrahydropyrazino[1,2-a]indol-1-one ring), s. 2.20 (3H, CH ₃ of NHCOCH ₃), m. 3.54 - 3.56 (1H, CH at C1 of cycloheptylic ring of CONHC ₇ H ₁₃), s. 3.779 and s. 3.783 (3... |

Таблица 1.10(3)

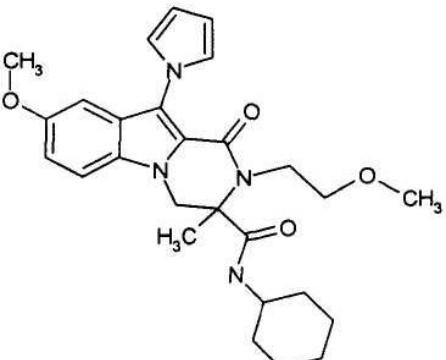
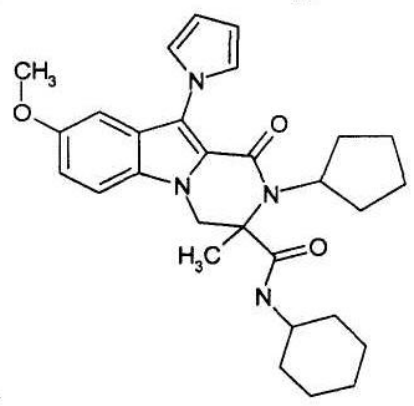
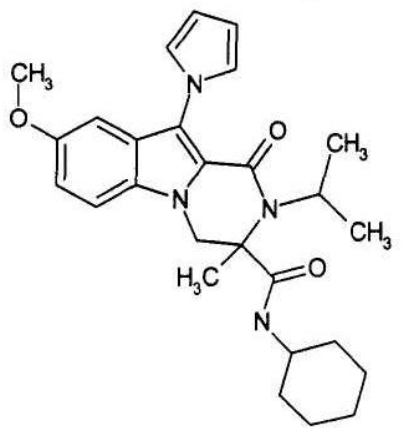
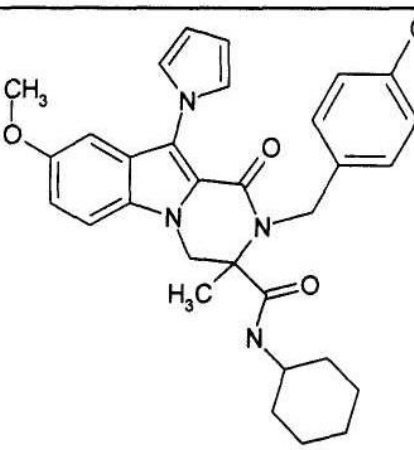
| № п.п. | Формула | Мол.маса | М-с., m/z (M+1), ПМП сп. |
|--------|---|-----------|--------------------------|
| 1 |  | 478,59643 | 479 |

Таблица 1.10(3)

| № п.п. | Формула | Мол.маса | М-с., m/z (M+1), ПМР сп. |
|--------|---|-----------|----------------------------|
| 2 |  | 488,63527 | 489 |
| 3 |  | 462,59703 | 463 |
| 4 |  | 545,08666 | 546 |

| | 609 | 84447 | 610 |
|---|-----|-----------|---|
| 5 | | 538,69581 | 539 |
| 6 | | 554,69521 | 555 |
| 7 | | 506,65061 | 507 |
| 8 | | 543,11435 | LC MS, m/z: 544 (M+1). ¹ H NMR: m. 0.79 - 1.66 (9H, CH of cyclohexylic ring), d. 0.83 (J = 6.60 Hz, 3H, CH ₃ at C4 of cyclohexylic ring), s. 1.52 and 1.56 (3H, CH ₃ at C3 of 1,2,3,4-tetrahydropyrazino[1,2-a]indol-1-onic ring - isomeric set), s. 2.43 (CH ₃ at C8 of 1,2,3,4-tetrahydropy... |
| 9 | | 536,7235 | LC MS, m/z: 537 (M+1). ¹ H NMR: d. 0.81 and 0.83 (J = 6.90 Hz, 3H, CH ₃ at C4 of cyclohexylic ring - isomeric set), m. 0.86 - 1.53 (9H, CH of cyclohexylic ring), t. 1.23 (J = 7.44 Hz, 3H, CH ₃ of CH ₂ CH ₃ - group), s. 1.54 and 1.59 (3H, CH ₃ at C3 of 1,2,3,4-tetrahydropyrazino[1,2-a]ind... |

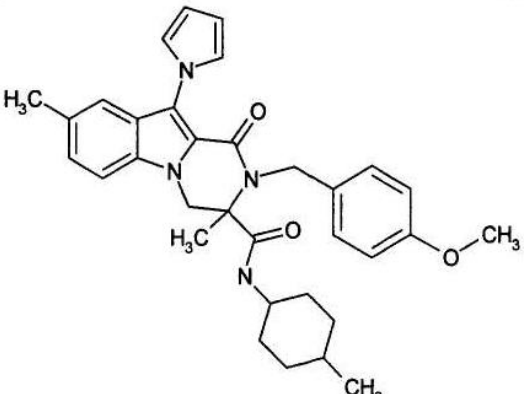
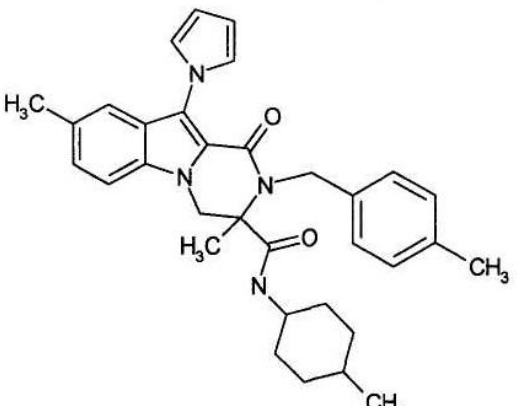
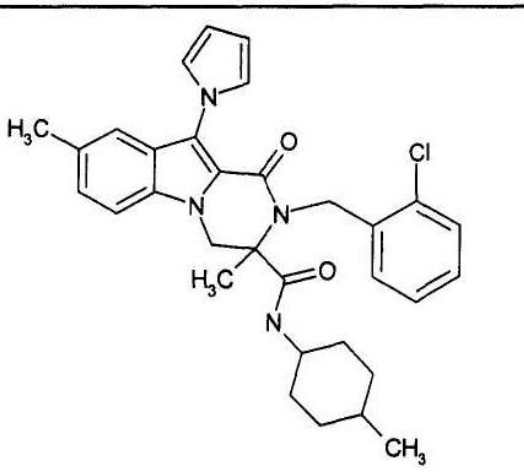
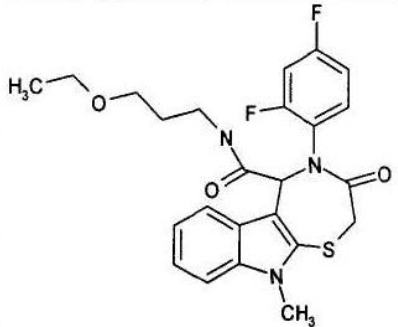
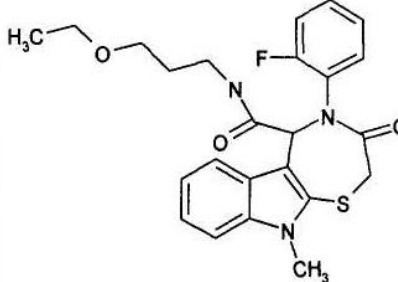
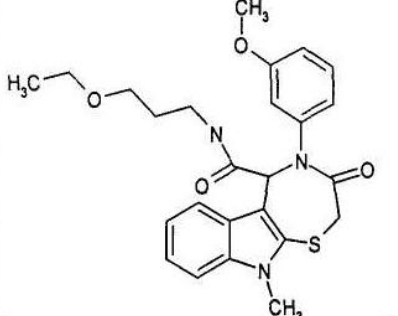
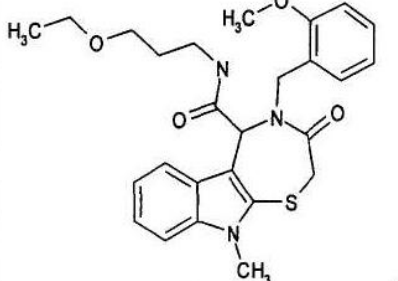
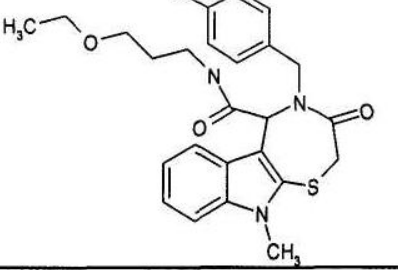
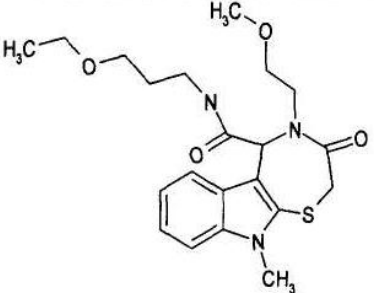
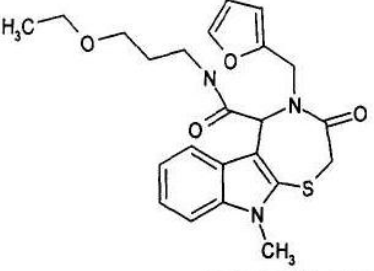
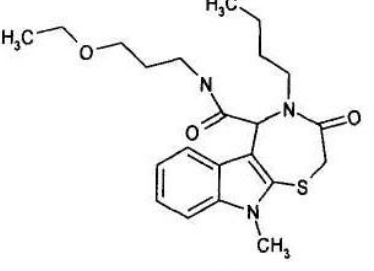
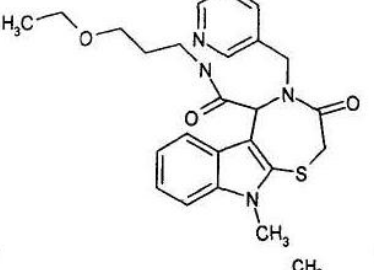
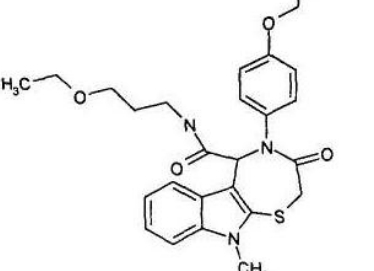
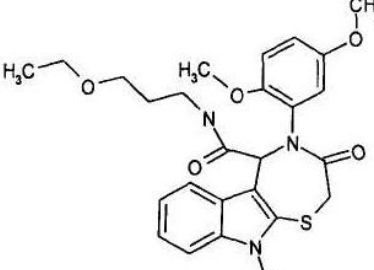
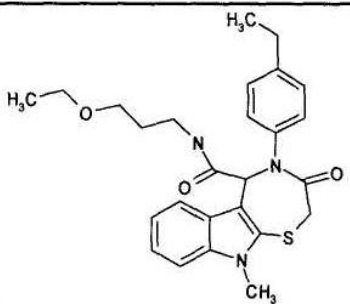
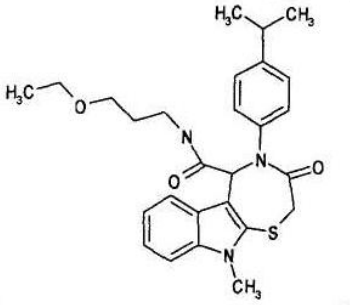
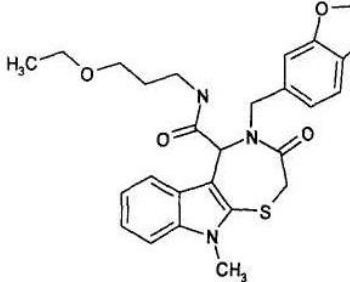
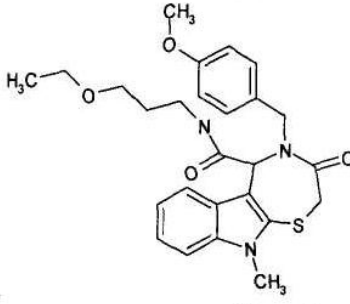
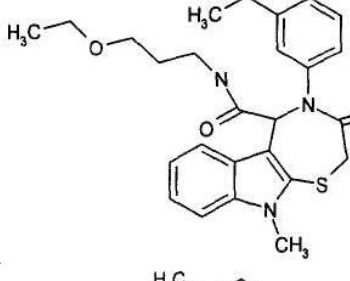
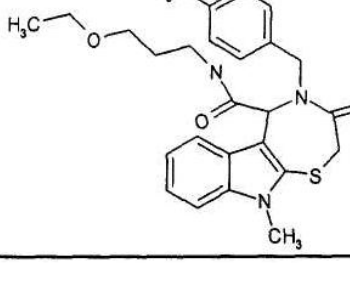
| 611 | 84447 | 612 |
|-----|---|--|
| 10 |  | <p>LC MS, m/z: 539 (M+1). ¹H NMR: d. 0.81 and 0.83 (J = 7.30 Hz, 3H, CH₃ at C4 of cyclohexylic ring - isomeric set), m. 0.86 - 1.63 (9H, CH of cyclohexylic ring), s. 1.54 and 1.60 (3H, CH₃ at C3 of 1,2,3,4-tetrahydropyrazino[1,2-a]indol-1-onic ring - isomeric set), s. 2.43 (CH₃ at C8...</p> |
| 11 |  | <p>LC MS, m/z: 544 (M+1). ¹H NMR: 423d. 0.81 and 0.83 (J = 7.30 Hz, 3H, CH₃ at C4 of cyclohexylic ring - isomeric set), m. 0.76 - 1.65 (9H, CH of cyclohexylic ring), s. 1.52 and 1.57 (3H, CH₃ at C3 of 1,2,3,4-tetrahydropyrazino[1,2-a]indol-1-onic ring - isomeric set), s. 2.43 (CH₃ at C8...</p> |
| 12 |  | <p>LC MS, m/z: 544 (M+1). ¹H NMR: d. 0.82 and 0.84 (J = 5.80 Hz, 3H, CH₃ at C4 of cyclohexylic ring - isomeric set), m. 0.80 - 1.64 (9H, CH of cyclohexylic ring), s. 1.52 and 1.55 (3H, CH₃ at C3 of 1,2,3,4-tetrahydropyrazino[1,2-a]indol-1-onic ring - isomeric set), s. 2.43 (CH₃ at C8...</p> |

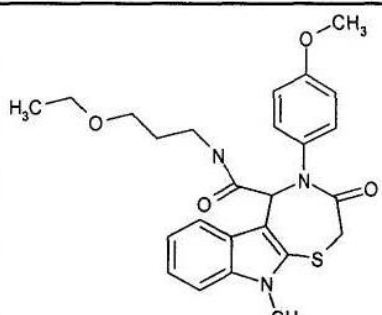
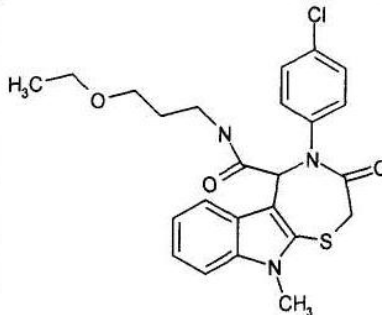
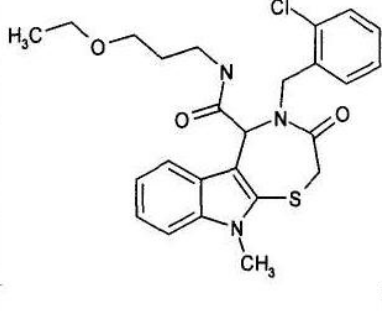
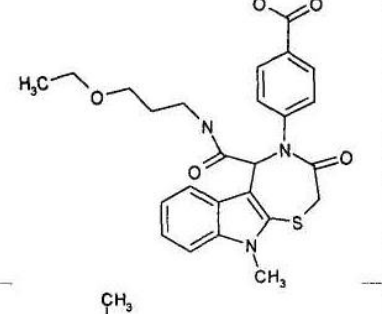
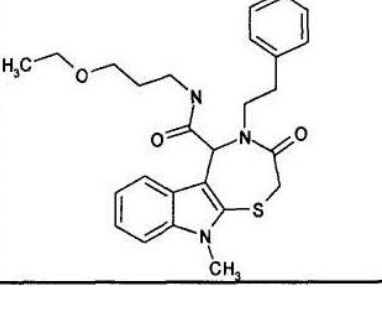
Таблица 1.11

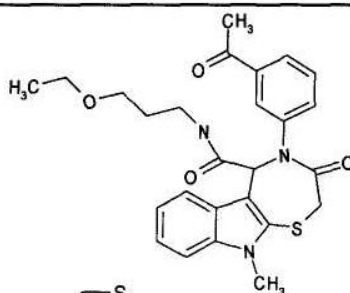
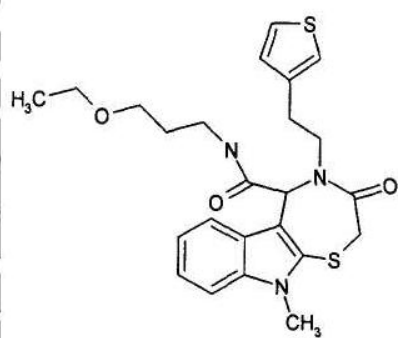
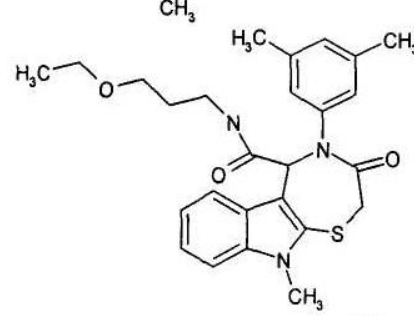
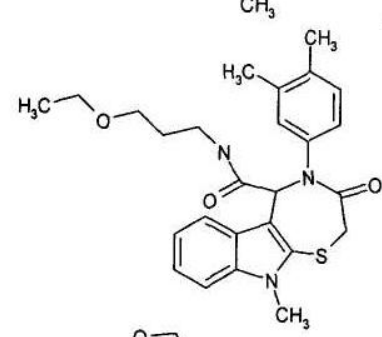
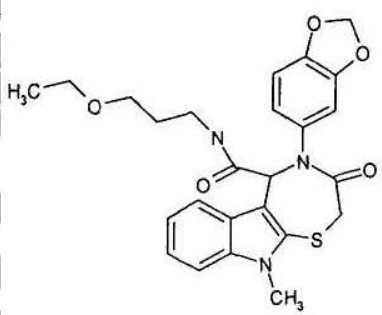
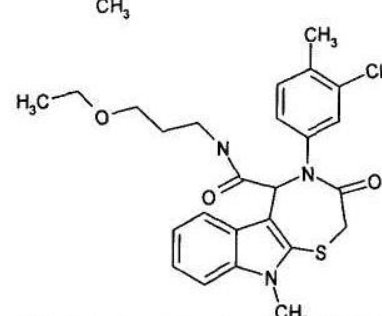
| № п.п. | Формула | Мол.маса | Мас-спектр, m/z (M+1) |
|--------|---------|-----------|-----------------------|
| 1 | | 479,62145 | 480 |
| 2 | | 461,63102 | 462 |
| 3 | | 455,55552 | 456 |
| 4 | | 472,01012 | 473 |
| 5 | | 505,56347 | 506 |

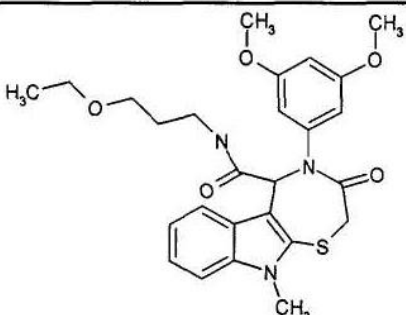
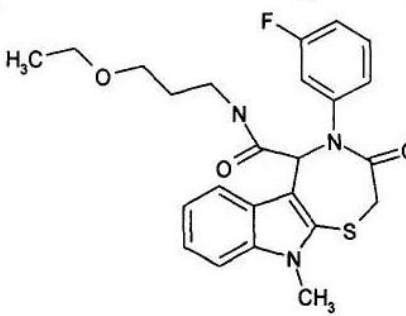
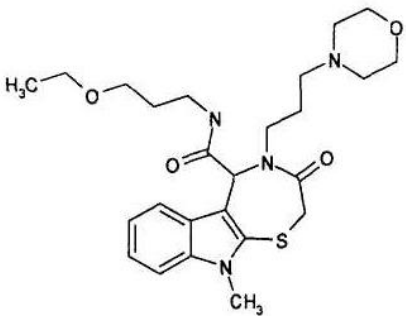
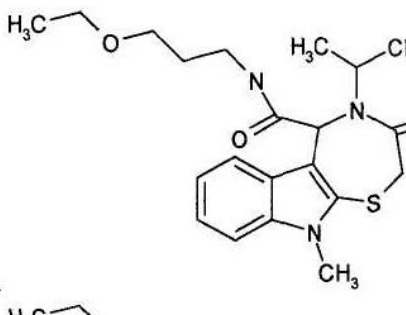
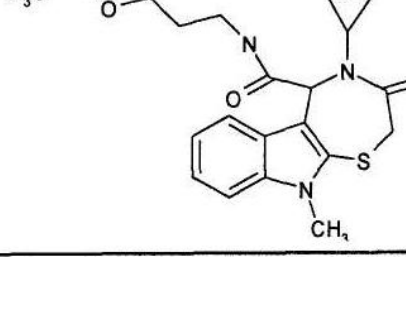
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|----|---|-----------|-----|
| 6 |  | 473,54595 | 474 |
| 7 |  | 455,55552 | 456 |
| 8 |  | 467,59158 | 468 |
| 9 |  | 481,61867 | 482 |
| 10 |  | 469,58261 | 470 |

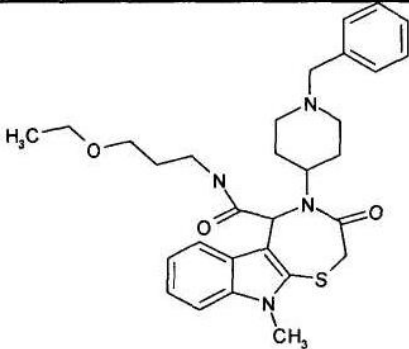
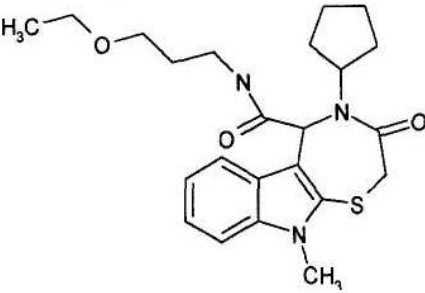
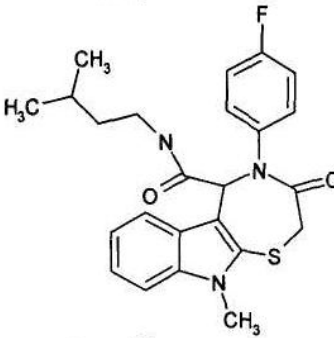
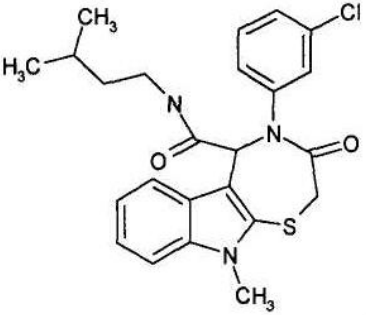
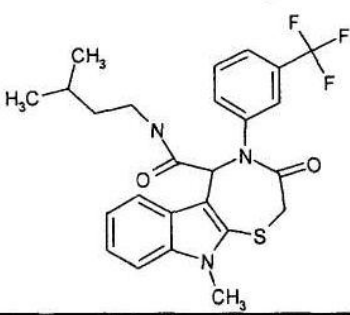
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|----|---|-----------|-----|
| 11 |  | 419,54698 | 420 |
| 12 |  | 441,55334 | 442 |
| 13 |  | 417,57467 | 418 |
| 14 |  | 452,57976 | 453 |
| 15 |  | 481,61867 | 482 |
| 16 |  | 497,61807 | 498 |

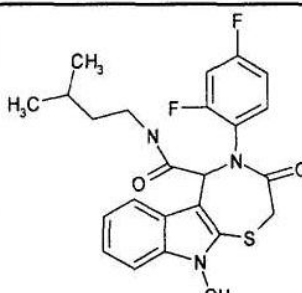
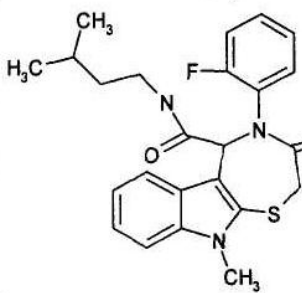
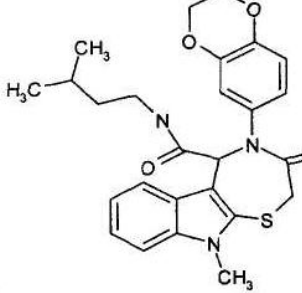
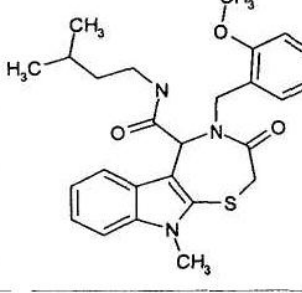
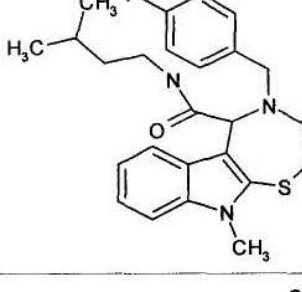
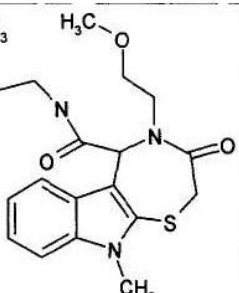
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|----|---|-----------|-----|
| 17 |  | 465,61927 | 466 |
| 18 |  | 479,64636 | 480 |
| 19 |  | 495,60213 | 496 |
| 20 |  | 481,61867 | 482 |
| 21 |  | 465,61927 | 466 |
| 22 |  | 465,61927 | 466 |

| | | | |
|----|---|-----------|-----|
| 23 |  | 467,59158 | 468 |
| 24 |  | 472,01012 | 473 |
| 25 |  | 486,03721 | 487 |
| 26 |  | 509,62922 | 510 |
| 27 |  | 479,64636 | 480 |

| | | | |
|----|---|-----------|-----|
| 28 |  | 479,60273 | 480 |
| 29 |  | 471,64503 | 472 |
| 30 |  | 465,61927 | 466 |
| 31 |  | 465,61927 | 466 |
| 32 |  | 481,57504 | 482 |
| 33 |  | 486,03721 | 487 |

| | | | |
|----|---|-----------|-----|
| 34 |  | 497,61807 | 498 |
| 35 |  | 455,55552 | 456 |
| 36 |  | 488,65407 | 489 |
| 37 |  | 403,54758 | 404 |
| 38 |  | 401,53164 | 402 |

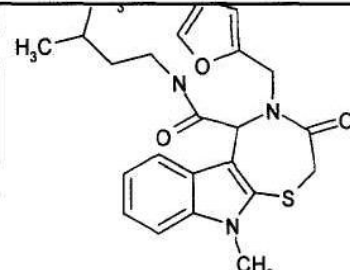
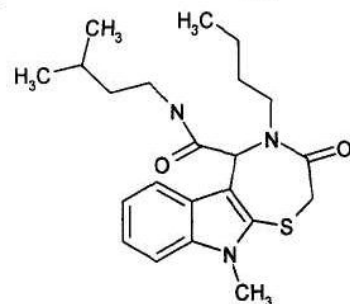
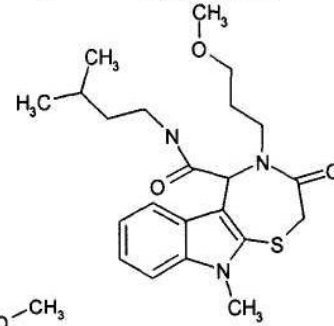
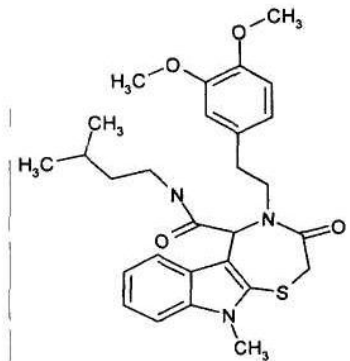
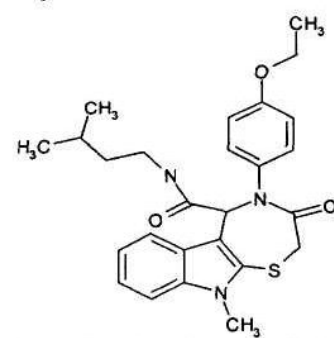
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|----|---|-----------|-----|
| 39 |  | 534,72636 | 535 |
| 40 |  | 429,58582 | 430 |
| 41 |  | 439,55612 | 440 |
| 42 |  | 456,01072 | 457 |
| 43 |  | 489,56407 | 490 |

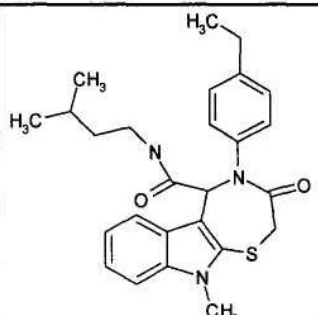
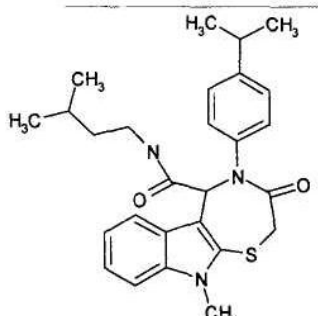
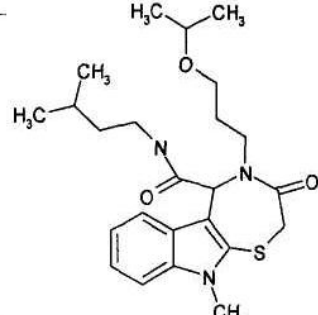
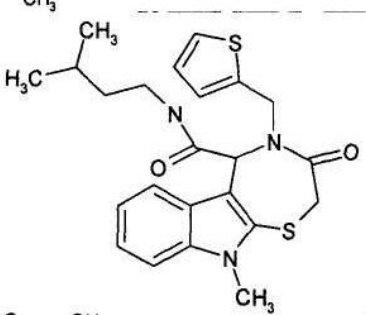
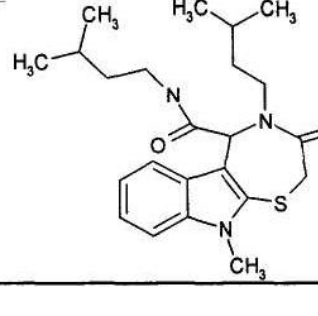
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|----|---|-----------|-----|
| 44 |  | 457,54655 | 458 |
| 45 |  | 439,55612 | 440 |
| 46 |  | 479,60273 | 480 |
| 47 |  | 465,61927 | 466 |
| 48 |  | 453,58321 | 454 |
| 49 |  | 403,54758 | 404 |

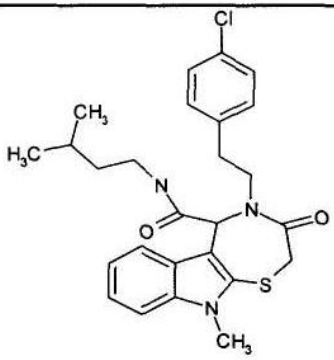
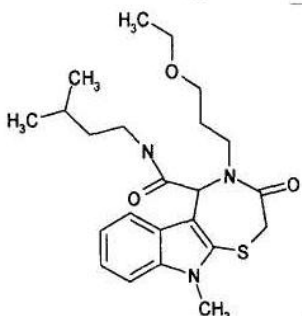
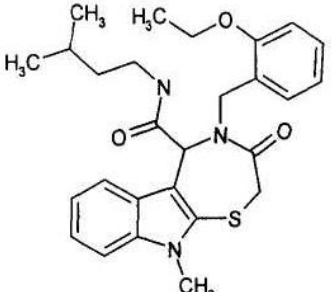
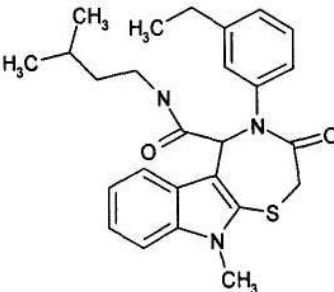
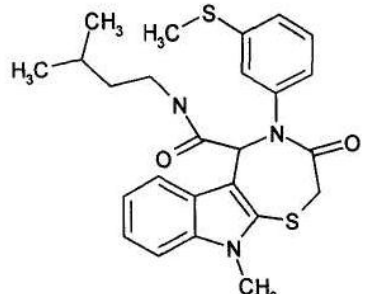
631

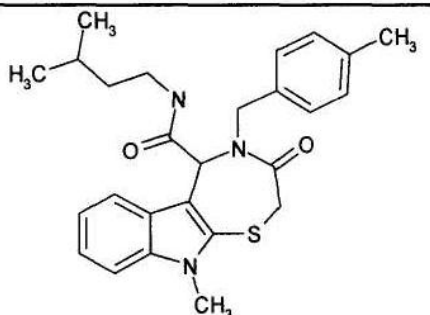
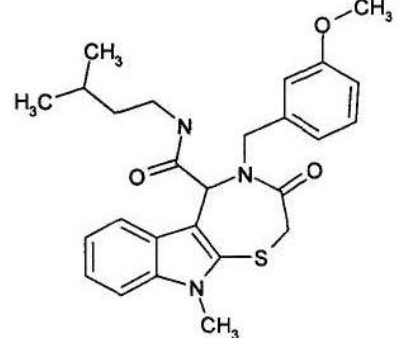
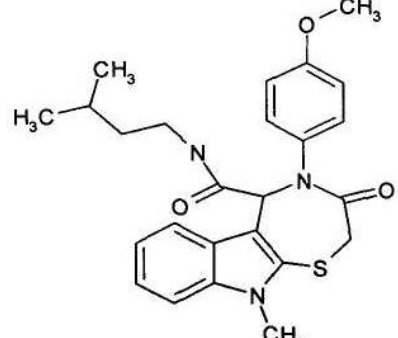
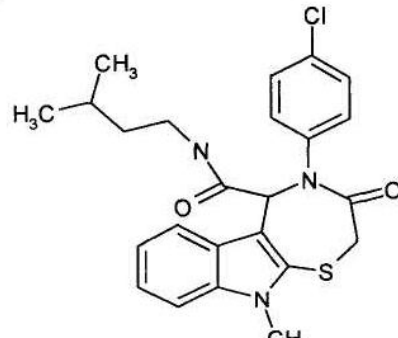
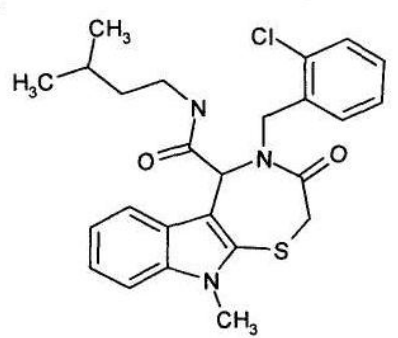
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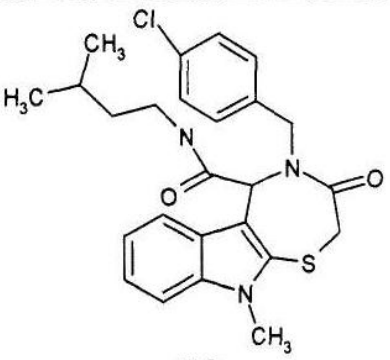
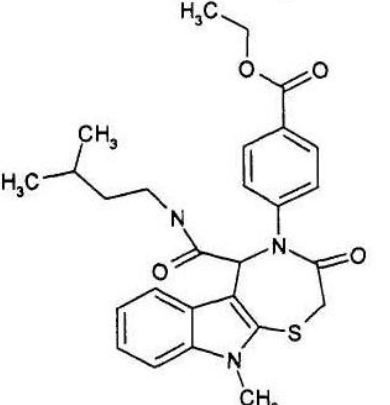
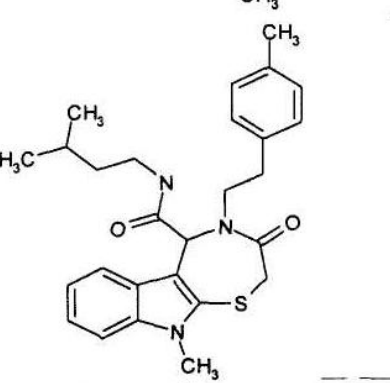
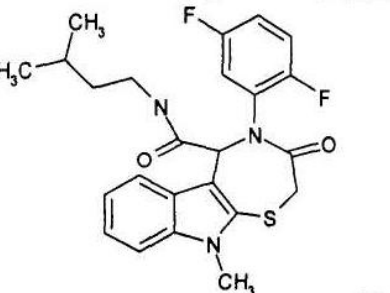
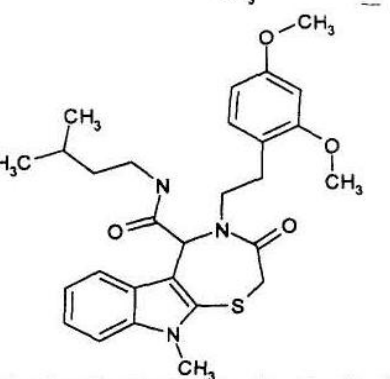
632

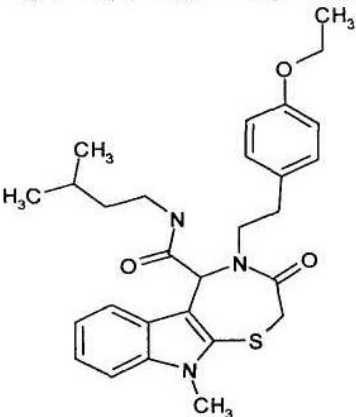
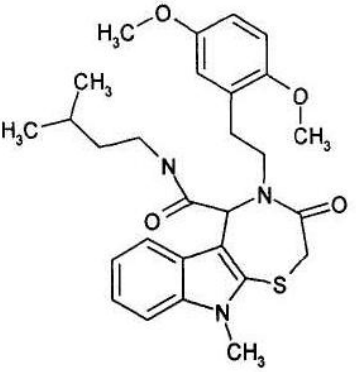
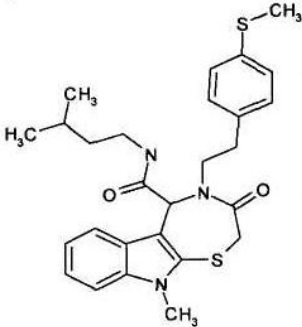
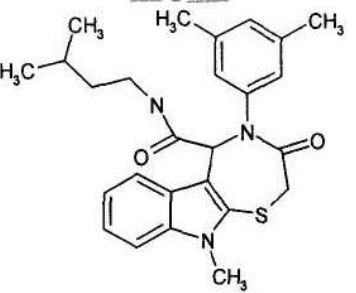
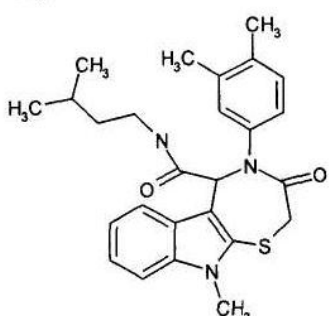
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| 50 |  | 425,55394 | 426 |
| 51 |  | 401,57527 | 402 |
| 52 |  | 417,57467 | 418 |
| 53 |  | 509,67285 | 510 |
| 54 |  | 465,61927 | 466 |

| | | | |
|----|---|-----------|-----|
| 55 |  | 449,61987 | 450 |
| 56 |  | 463,64696 | 464 |
| 57 |  | 445,62885 | 446 |
| 58 |  | 441,61854 | 442 |
| 59 |  | 415,60236 | 416 |

| | | | |
|----|---|-----------|-----|
| 60 |  | 484,0649 | 485 |
| 61 |  | 431,60176 | 432 |
| 62 |  | 479,64636 | 480 |
| 63 |  | 449,61987 | 450 |
| 64 |  | 467,65678 | 468 |

| | | | |
|----|---|-----------|-----|
| 65 |  | 449,61987 | 450 |
| 66 |  | 465,61927 | 466 |
| 67 |  | 451,59218 | 452 |
| 68 |  | 456,01072 | 457 |
| 69 |  | 470,03781 | 471 |

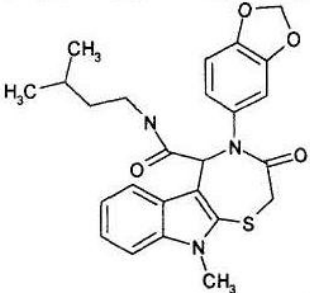
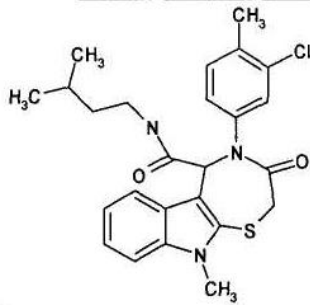
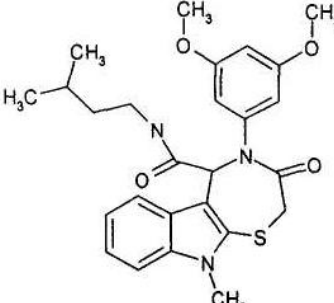
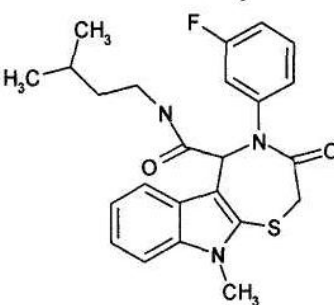
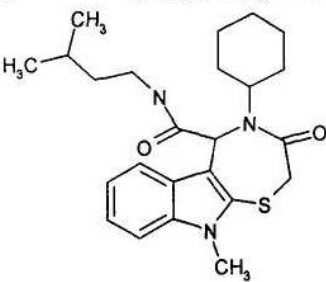
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| 70 |  | 470,03781 | 471 |
| 71 |  | 493,62982 | 494 |
| 72 |  | 463,64696 | 464 |
| 73 |  | 457,54655 | 458 |
| 74 |  | 509,67285 | 510 |

| | | | |
|----|---|-----------|-----|
| 75 |  | 493,67345 | 494 |
| 76 |  | 509,67285 | 510 |
| 77 |  | 495,71096 | 496 |
| 78 |  | 449,61987 | 450 |
| 79 |  | 449,61987 | 450 |

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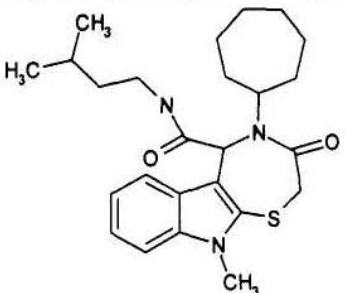
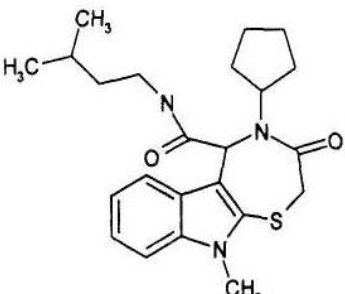
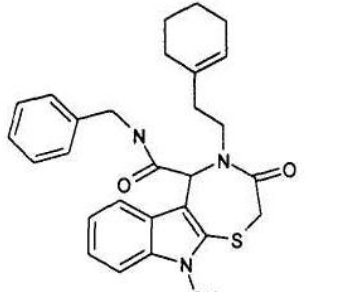
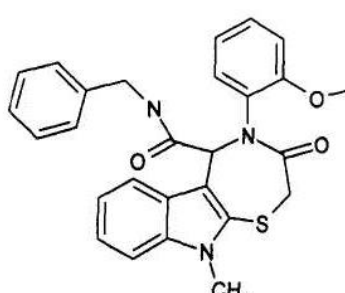
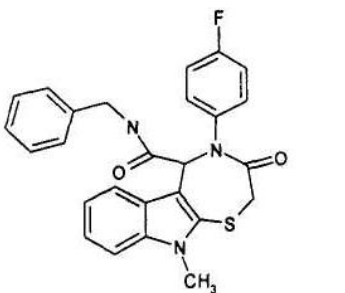
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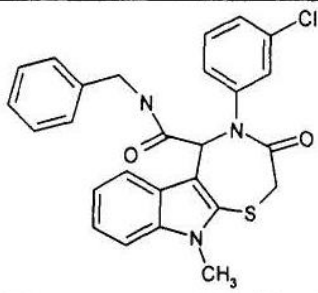
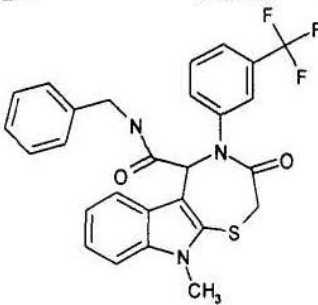
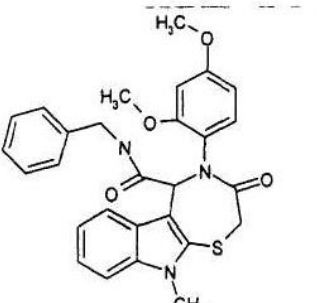
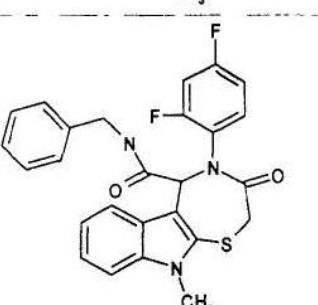
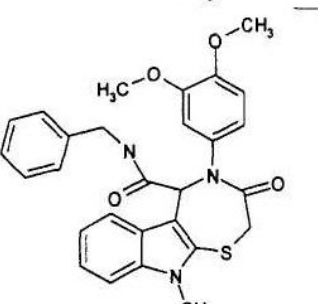
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|----|---|-----------|-----|
| 80 |  | 465,57564 | 466 |
| 81 |  | 470,03781 | 471 |
| 82 |  | 481,61867 | 482 |
| 83 |  | 439,55612 | 440 |
| 84 |  | 427,61351 | 428 |

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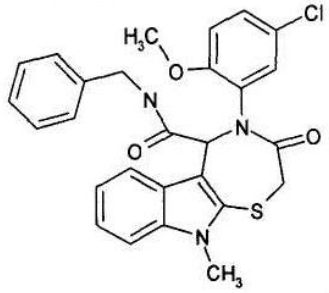
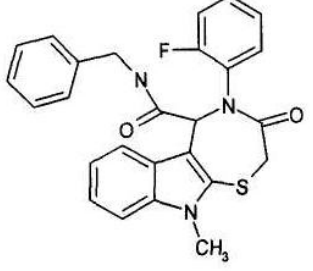
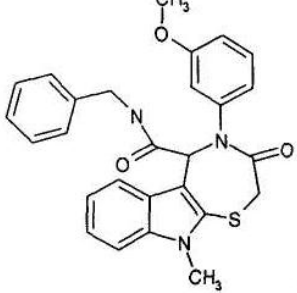
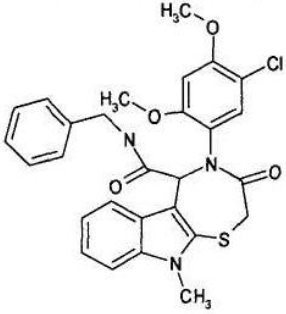
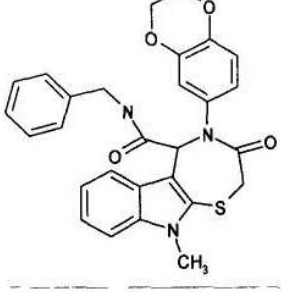
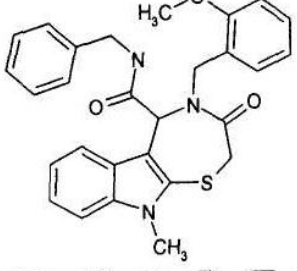
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|----|---|-----------|-----|
| 85 |  | 441,6406 | 442 |
| 86 |  | 413,58642 | 414 |
| 87 |  | 473,64217 | 474 |
| 88 |  | 471,5826 | 472 |
| 89 |  | 459,54654 | 460 |

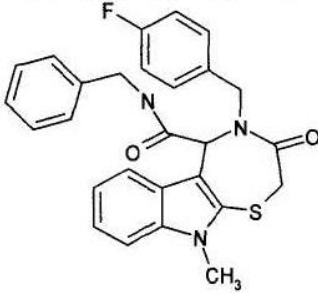
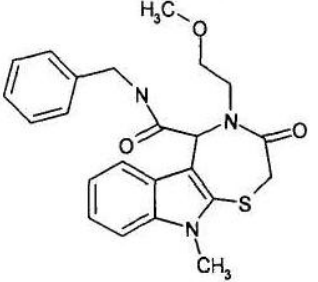
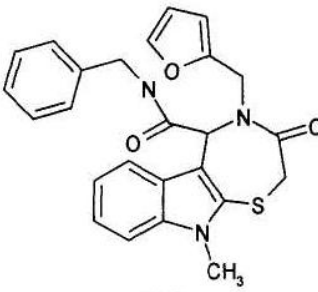

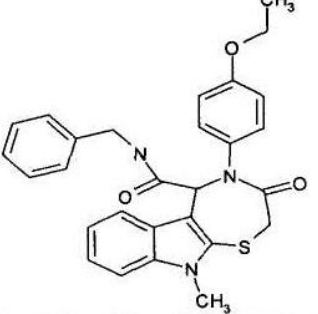
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|----|---|-----------|-----|
| 90 |  | 476,00114 | 477 |
| 91 |  | 509,55449 | 510 |
| 92 |  | 501,60909 | 502 |
| 93 |  | 477,53697 | 478 |
| 94 |  | 501,60909 | 502 |

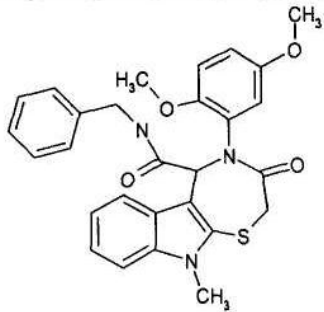
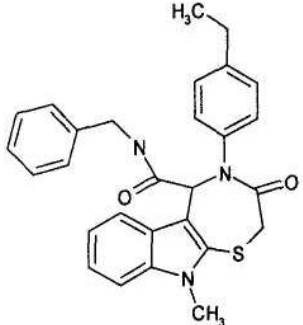
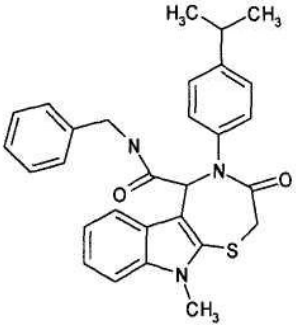
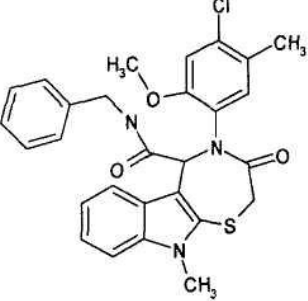
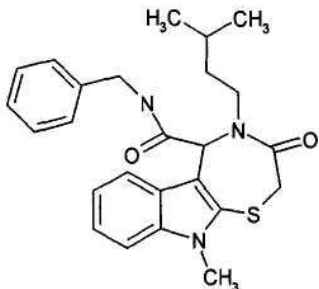
649

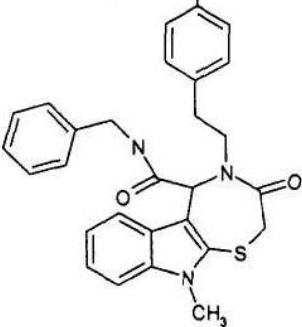
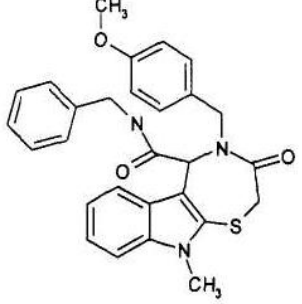
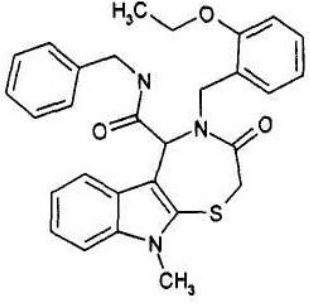
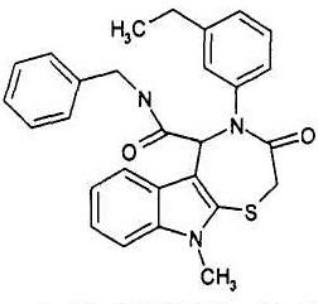
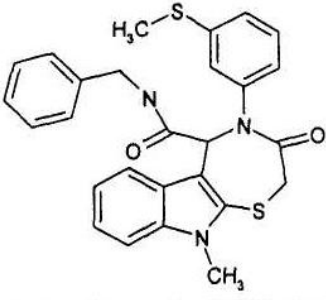
84447

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| | | | |
|-----|---|-----------|-----|
| 95 |  | 506,02763 | 507 |
| 96 |  | 459,54654 | 460 |
| 97 |  | 471,5826 | 472 |
| 98 |  | 536,05412 | 537 |
| 99 |  | 499,59315 | 500 |
| 100 |  | 485,60969 | 486 |

| | | | |
|-----|---|-----------|-----|
| 101 |  | 473,57363 | 474 |
| 102 |  | 423,538 | 424 |
| 103 |  | 445,54436 | 446 |
| 104 |  | 421,56569 | 422 |
| 105 |  | 485,60969 | 486 |

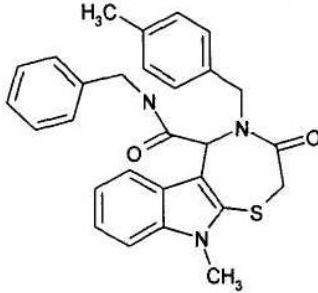
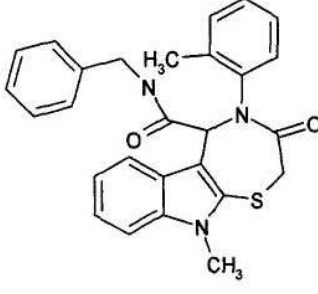
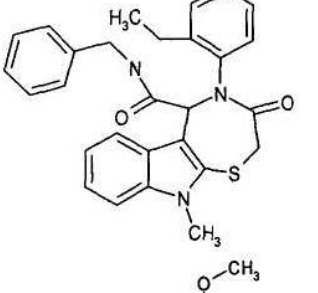
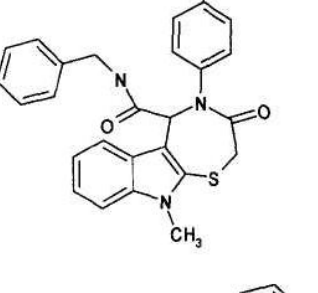
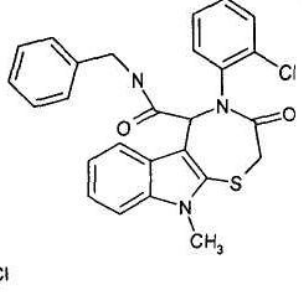
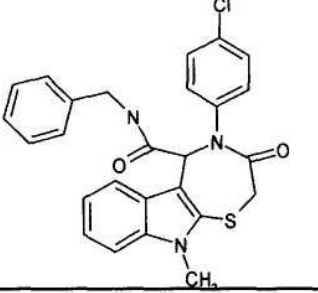
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|-----|---|-----------|-----|
| 106 |  | 501,60909 | 502 |
| 107 |  | 469,61029 | 470 |
| 108 |  | 483,63738 | 484 |
| 109 |  | 520,05472 | 521 |
| 110 |  | 435,59278 | 436 |

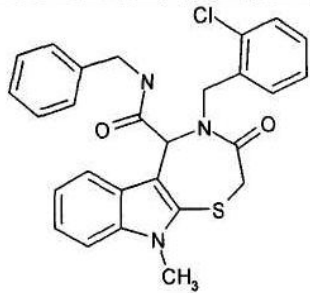
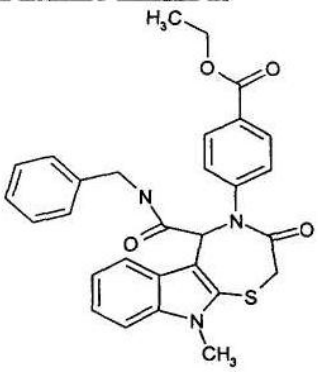
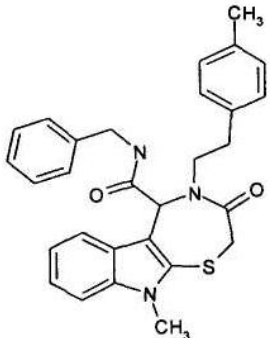
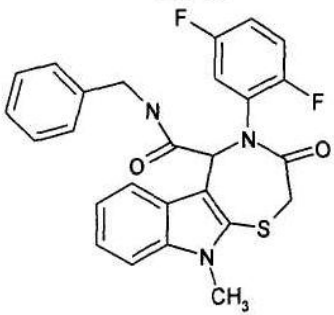
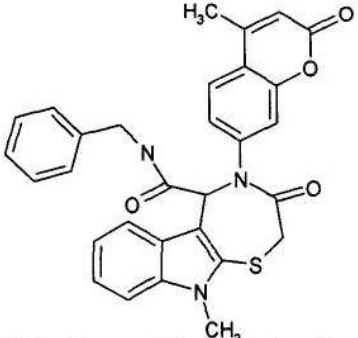
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|-----|---|-----------|-----|
| 111 |  | 504,05532 | 505 |
| 112 |  | 485,60969 | 486 |
| 113 |  | 499,63678 | 500 |
| 114 |  | 469,61029 | 470 |
| 115 |  | 487,6472 | 488 |

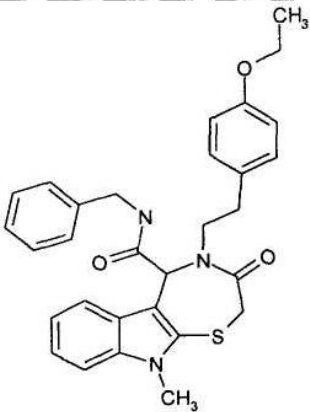
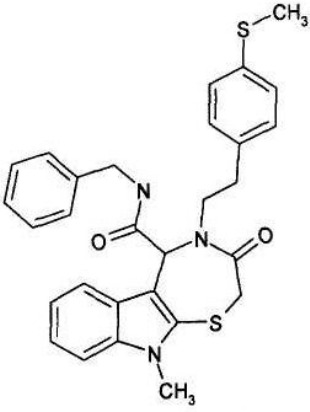
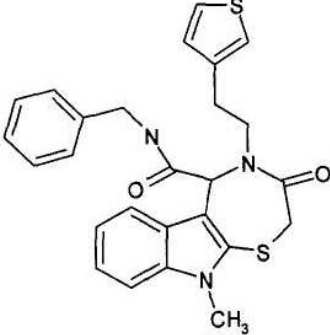
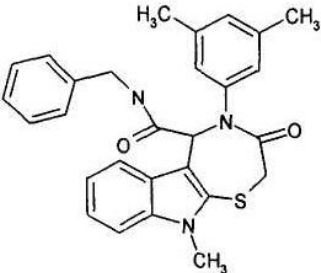
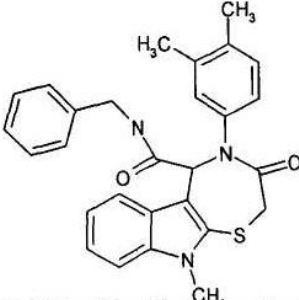
657

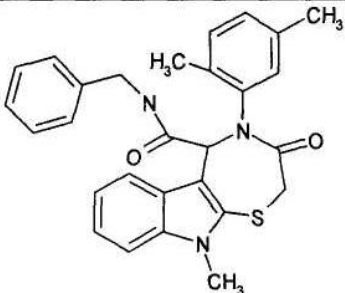
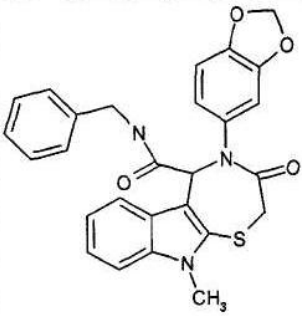
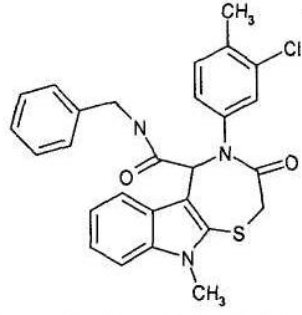
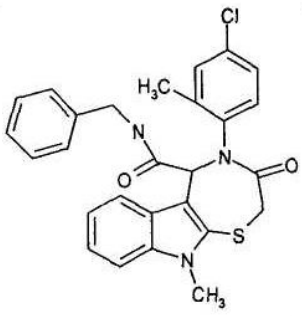
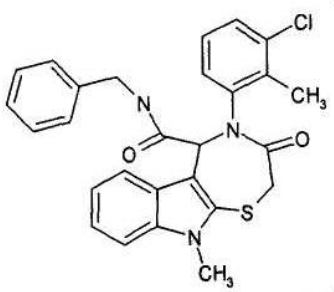
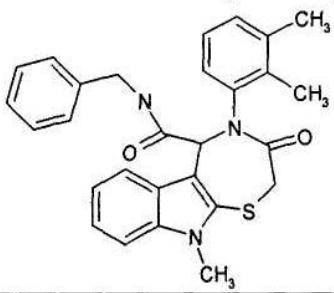
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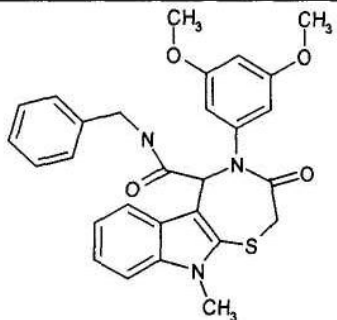
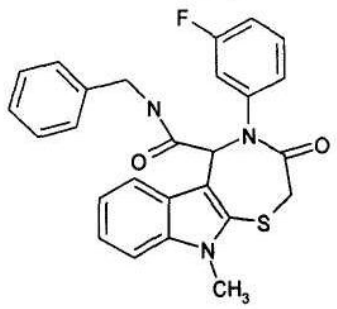
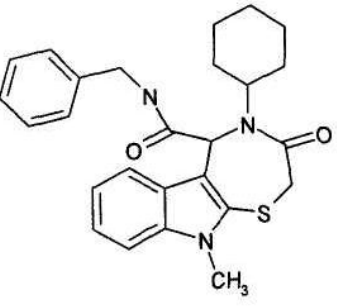
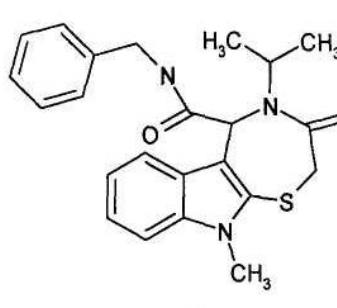
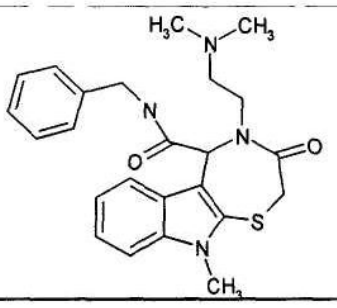
658

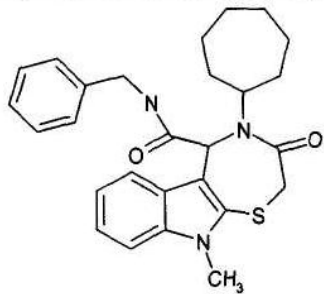
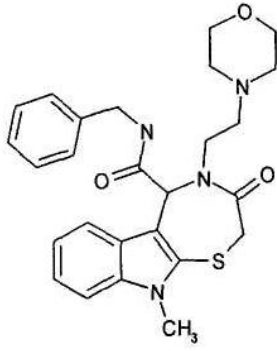


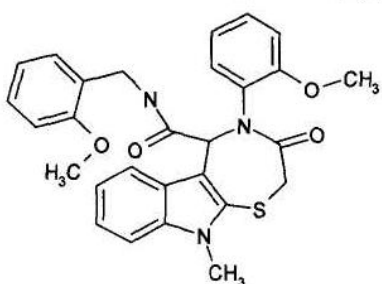
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|-----|---|-----------|-----|
| 116 |  | 469,61029 | 470 |
| 117 |  | 455,5832 | 456 |
| 118 |  | 469,61029 | 470 |
| 119 |  | 471,5826 | 472 |
| 120 |  | 476,00114 | 477 |
| 121 |  | 476,00114 | 477 |

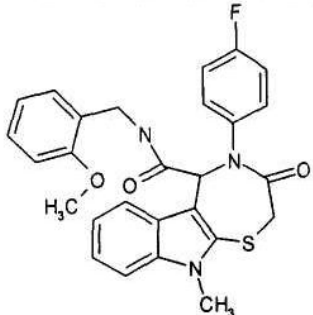
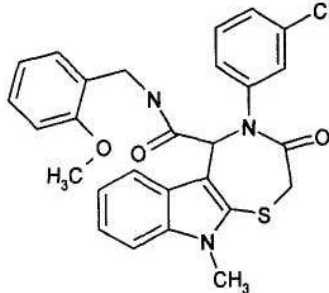
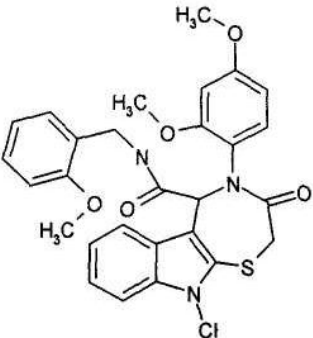
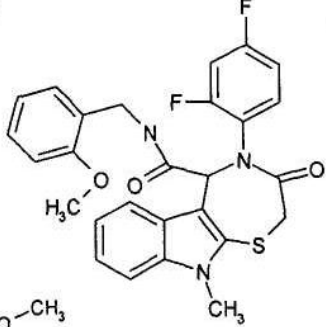
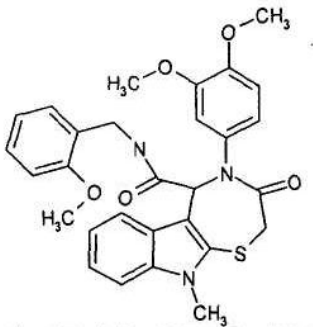
| | | | |
|-----|---|-----------|-----|
| 122 |  | 490,02823 | 491 |
| 123 |  | 513,62024 | 514 |
| 124 |  | 483,63738 | 484 |
| 125 |  | 477,53697 | 478 |
| 126 |  | 523,61545 | 524 |

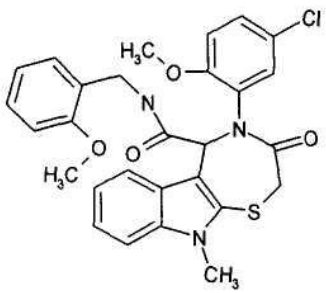
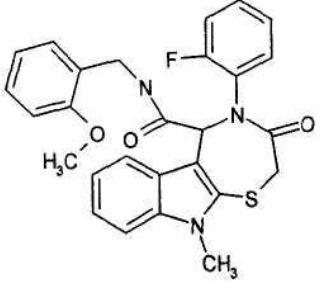
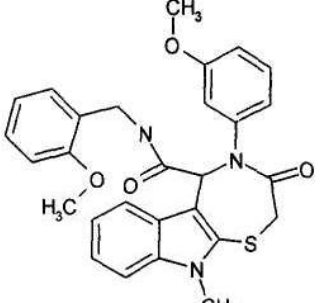
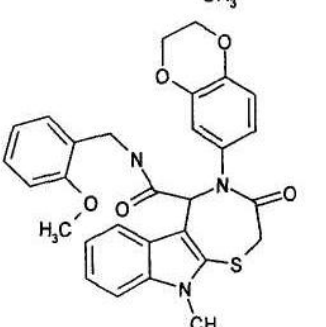
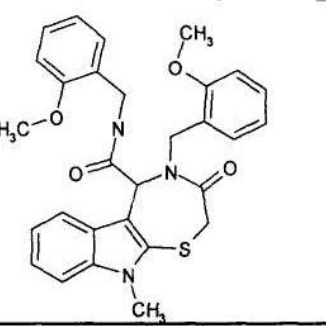
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| 127 |  | 513,66387 | 514 |
| 128 |  | 515,70138 | 516 |
| 129 |  | 475,63605 | 476 |
| 130 |  | 469,61029 | 470 |
| 131 |  | 469,61029 | 470 |

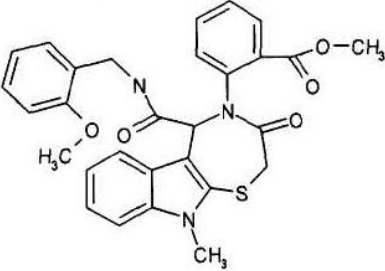
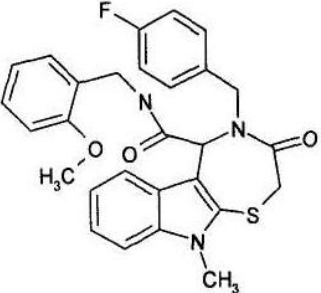

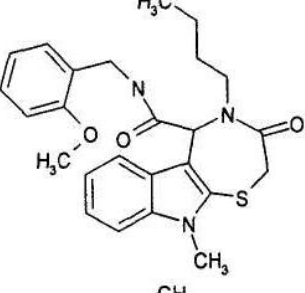
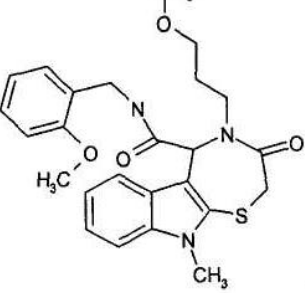
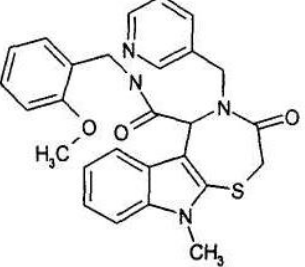
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| 133 |  | 485,56606 | 486 |
| 134 |  | 490,02823 | 491 |
| 135 |  | 490,02823 | 491 |
| 136 |  | 490,02823 | 491 |
| 137 |  | 469,61029 | 470 |

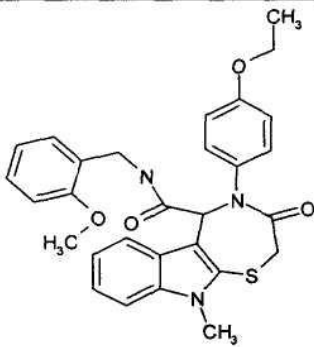
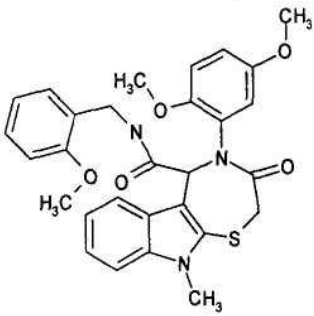
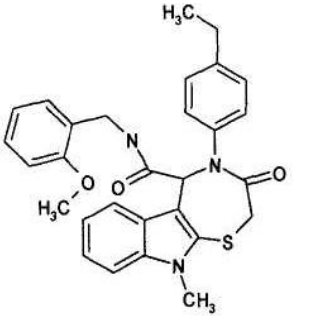
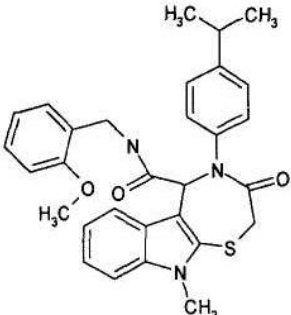
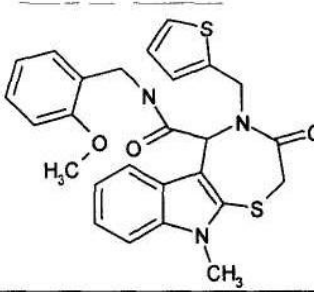
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| 138 |  | 501,60909 | 502 |
| 139 |  | 459,54654 | 460 |
| 140 |  | 447,60393 | 448 |
| 141 |  | 407,5386 | 408 |
| 142 |  | 436,58036 | 437 |

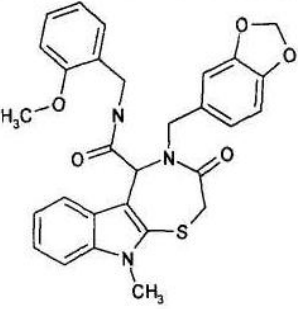
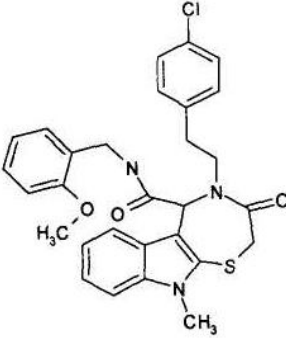
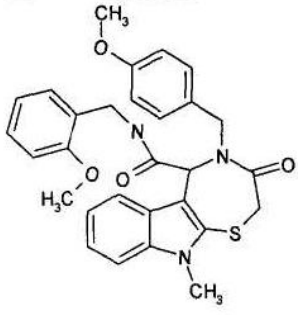
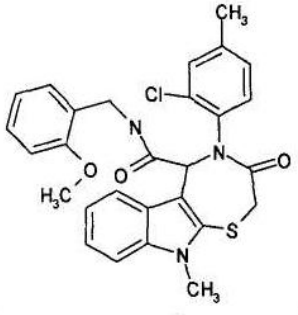
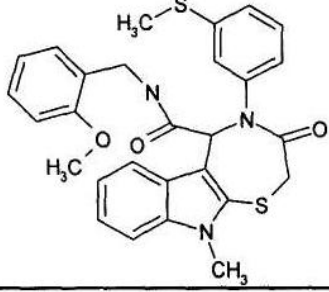
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| 144 |  | 478,618 | 479 |
| 145 |  | 405,52266 | 406 |
| 146 |  | 503,66866 | 504 |
| 147 |  | 501,60909 | 502 |

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|-----|---|-----------|-----|
| 148 |  | 489,57303 | 490 |
| 149 |  | 506,02763 | 507 |
| 150 |  | 531,63558 | 532 |
| 151 |  | 507,56346 | 508 |
| 152 |  | 531,63558 | 532 |

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|-----|---|-----------|-----|
| 153 |  | 536,05412 | 537 |
| 154 |  | 489,57303 | 490 |
| 155 |  | 501,60909 | 502 |
| 156 |  | 529,61964 | 530 |
| 157 |  | 515,63618 | 516 |

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|-----|---|-----------|-----|
| 158 |  | 529,61964 | 530 |
| 159 |  | 503,60012 | 504 |
| 160 |  | 475,57085 | 476 |
| 161 |  | 451,59218 | 452 |
| 162 |  | 467,59158 | 468 |
| 163 |  | 486,59727 | 487 |


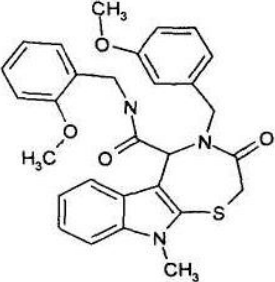
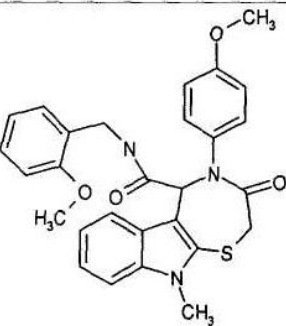
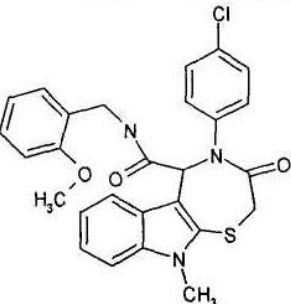
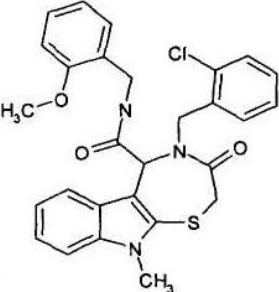
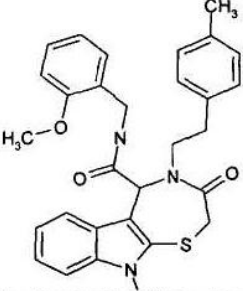
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|-----|---|-----------|-----|
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| 165 |  | 531,63558 | 532 |
| 166 |  | 499,63678 | 500 |
| 167 |  | 513,66387 | 514 |
| 168 |  | 491,63545 | 492 |

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|-----|---|-----------|-----|
| 169 |  | 529,61964 | 530 |
| 170 |  | 534,08181 | 535 |
| 171 |  | 515,63618 | 516 |
| 172 |  | 520,05472 | 521 |
| 173 |  | 517,67369 | 518 |

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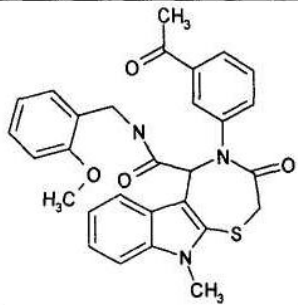
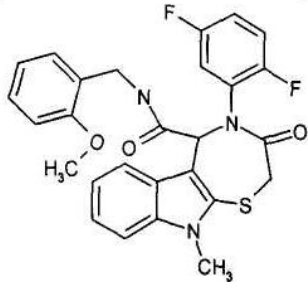
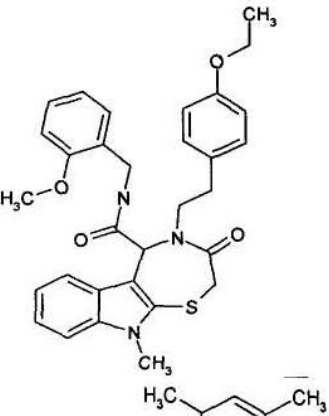

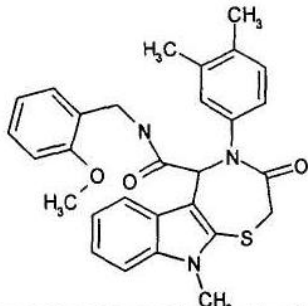
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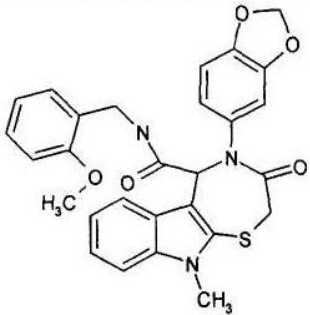
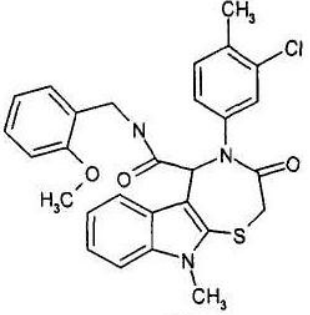
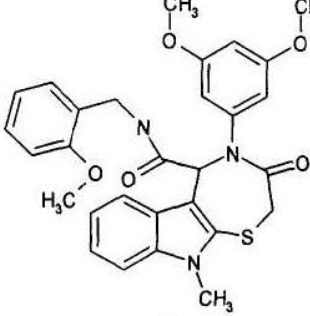
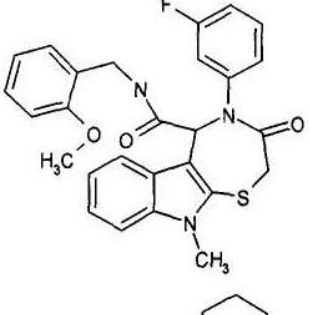
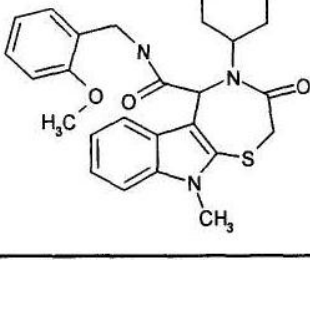
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|-----|---|-----------|-----|
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| 175 |  | 515,63618 | 516 |
| 176 |  | 501,60909 | 502 |
| 177 |  | 506,02763 | 507 |
| 178 |  | 520,05472 | 521 |
| 179 |  | 513,66387 | 514 |

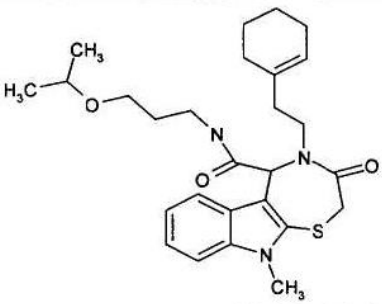
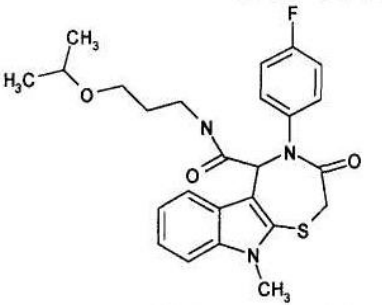
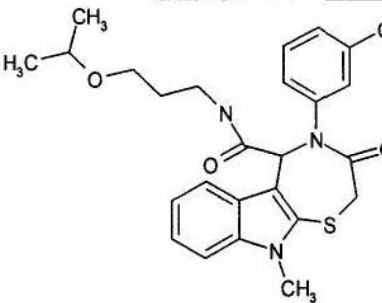
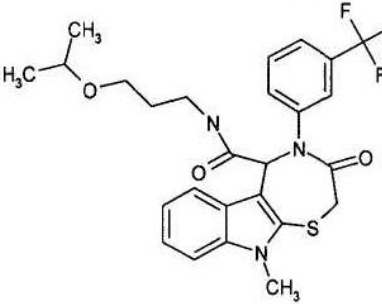
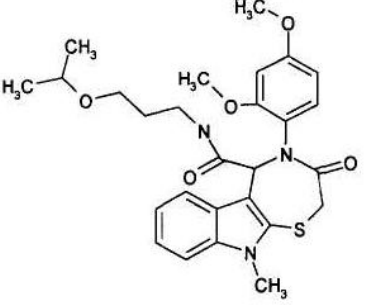
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| | | | |
|-----|---|-----------|-----|
| 180 |  | 513,62024 | 514 |
| 181 |  | 507,56346 | 508 |
| 182 |  | 543,69036 | 544 |
| 183 |  | 499,63678 | 500 |
| 184 |  | 499,63678 | 500 |

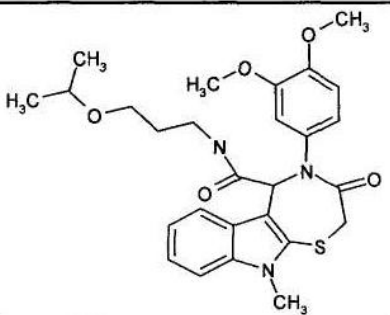
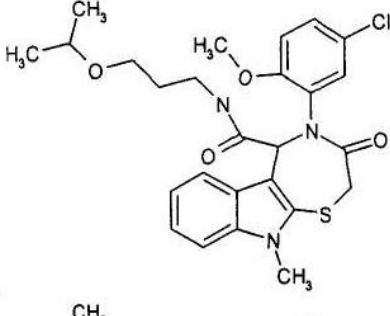
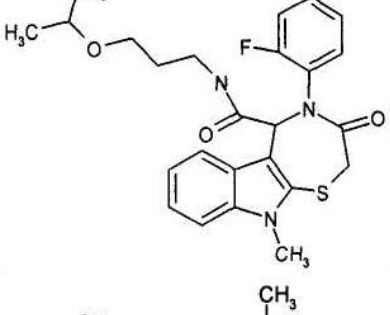
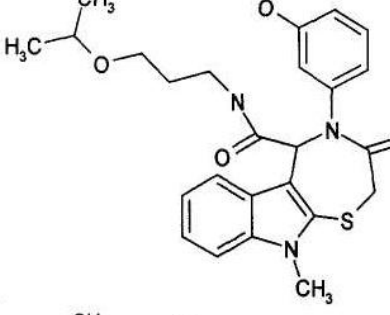
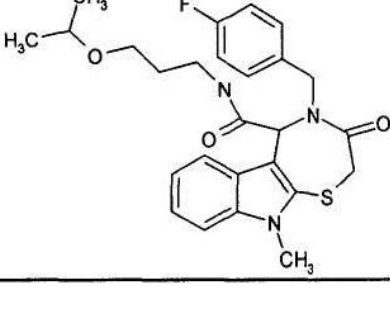
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|-----|---|-----------|-----|
| 185 |  | 515,59255 | 516 |
| 186 |  | 520,05472 | 521 |
| 187 |  | 531,63558 | 532 |
| 188 |  | 489,57303 | 490 |
| 189 |  | 477,63042 | 478 |

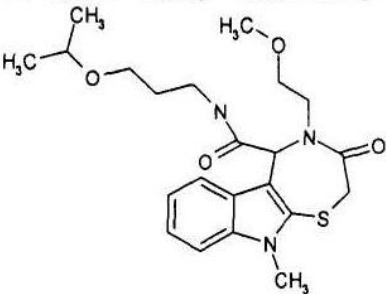
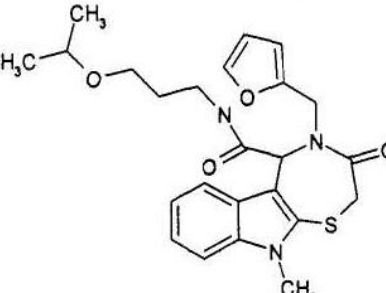
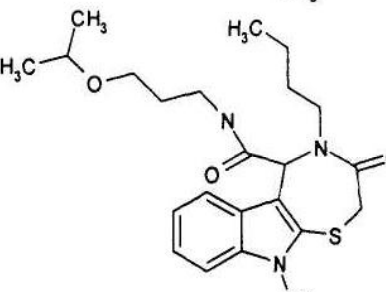
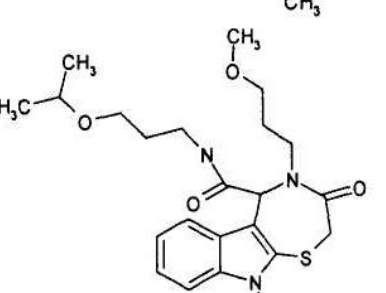
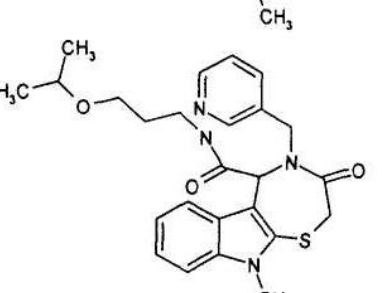
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|-----|---|-----------|-----|
| 190 |  | 483,67824 | 484 |
| 191 |  | 469,58261 | 470 |
| 192 |  | 486,03721 | 487 |
| 193 |  | 519,59056 | 520 |
| 194 |  | 511,64516 | 512 |

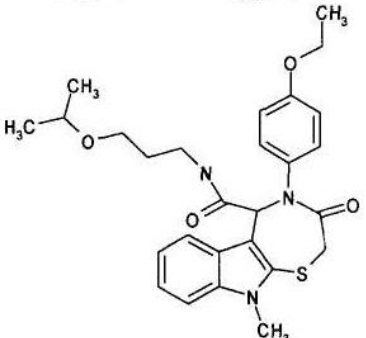
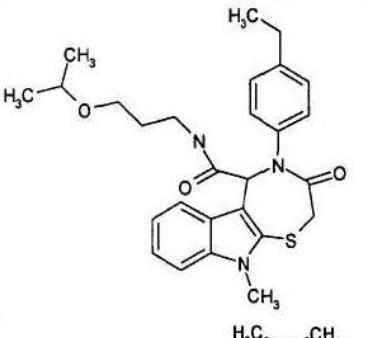
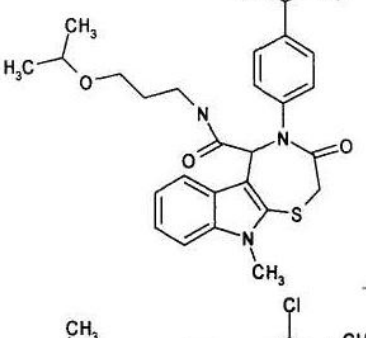
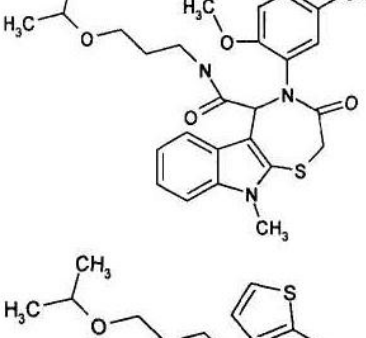
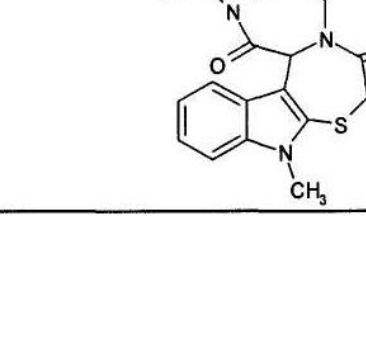
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| | | | |
|-----|---|-----------|-----|
| 195 |  | 511,64516 | 512 |
| 196 |  | 516,0637 | 517 |
| 197 |  | 469,58261 | 470 |
| 198 |  | 481,61867 | 482 |
| 199 |  | 483,6097 | 484 |

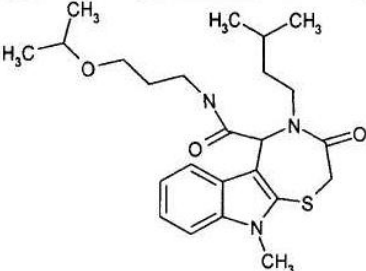
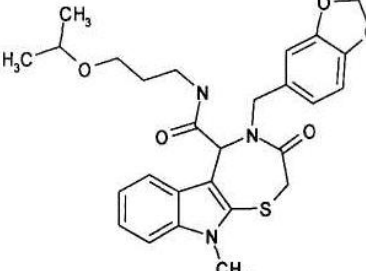
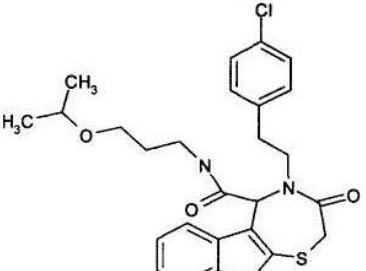
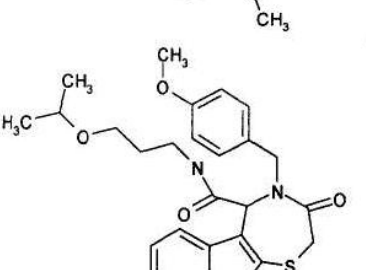
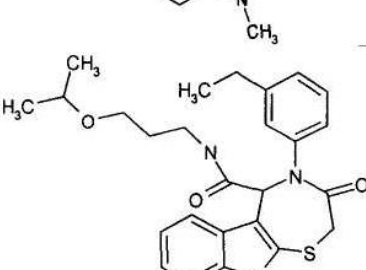
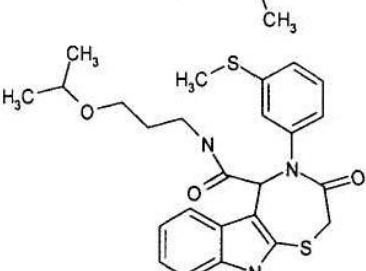
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|-----|---|-----------|-----|
| 200 |  | 433,57407 | 434 |
| 201 |  | 455,58043 | 456 |
| 202 |  | 431,60176 | 432 |
| 203 |  | 447,60116 | 448 |
| 204 |  | 466,60685 | 467 |

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|-----|---|-----------|-----|
| 205 |  | 495,64576 | 496 |
| 206 |  | 479,64636 | 480 |
| 207 |  | 493,67345 | 494 |
| 208 |  | 530,09079 | 531 |
| 209 |  | 471,64503 | 472 |

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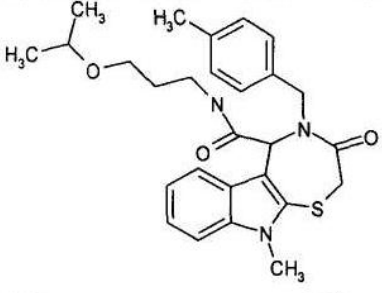
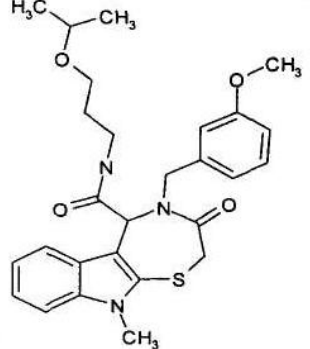
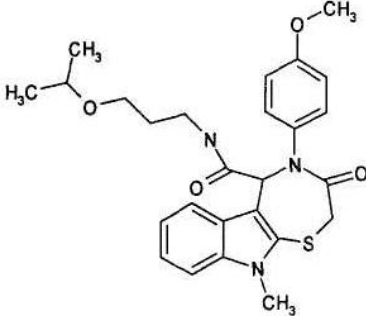
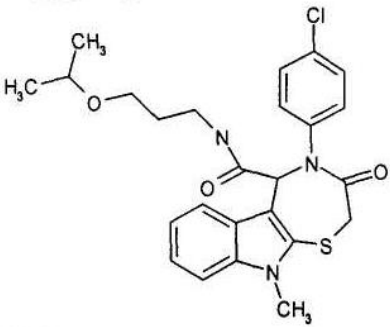
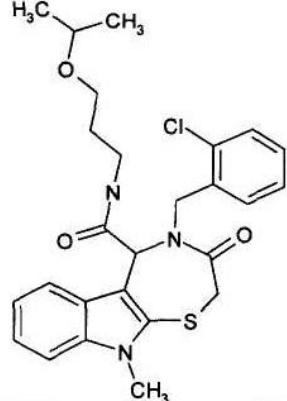
694

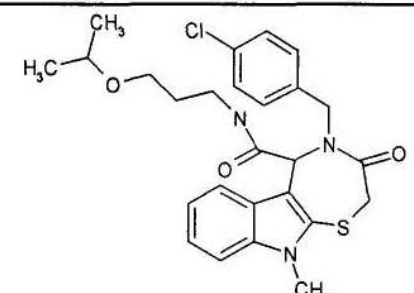
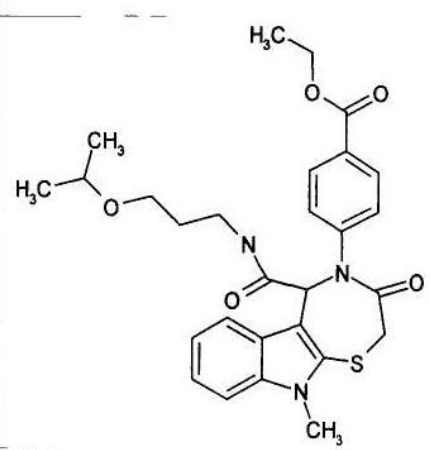
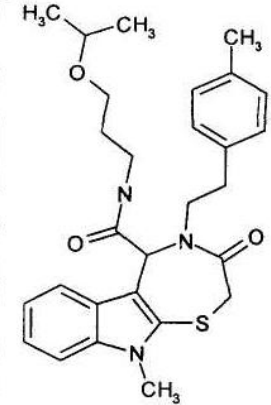
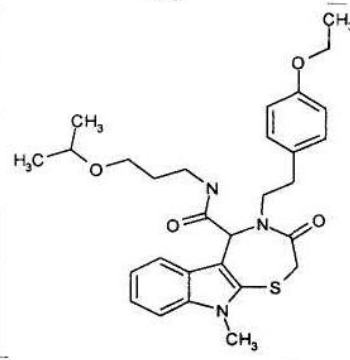
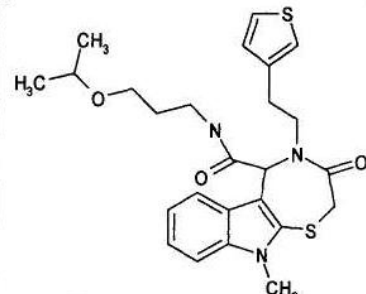
| | | | |
|-----|---|-----------|-----|
| 210 |  | 445,62885 | 446 |
| 211 |  | 509,62922 | 510 |
| 212 |  | 514,09139 | 515 |
| 213 |  | 495,64576 | 496 |
| 214 |  | 479,64636 | 480 |
| 215 |  | 497,68327 | 498 |

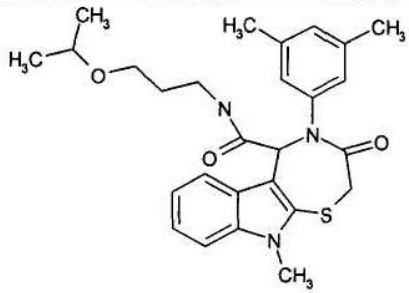
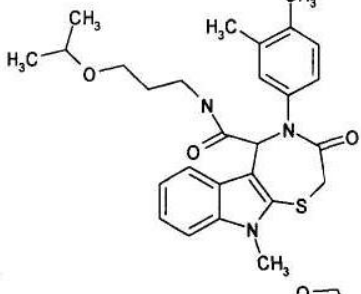
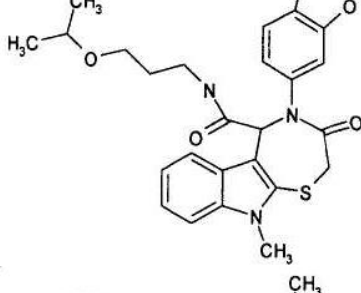
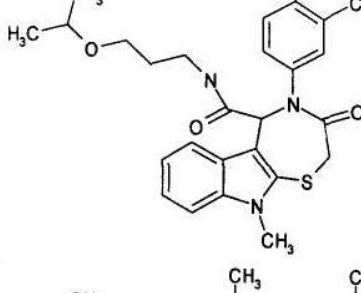
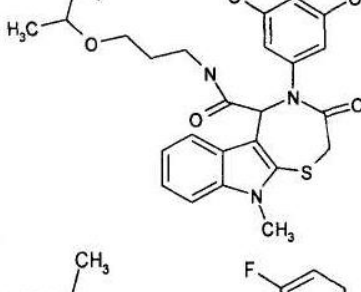
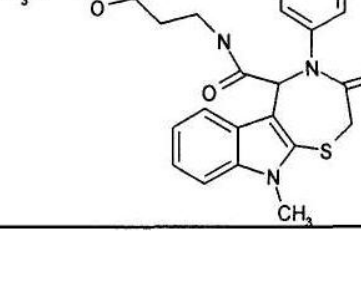
695

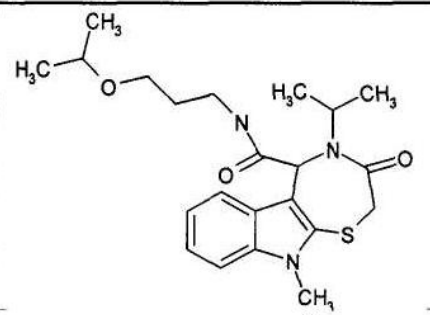
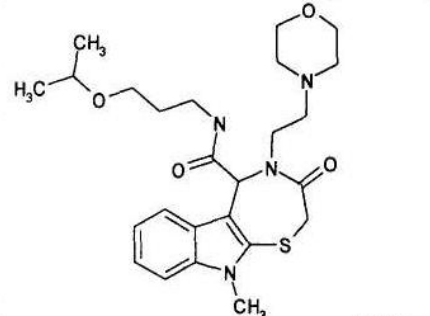
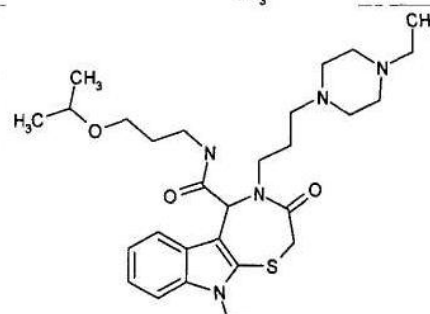
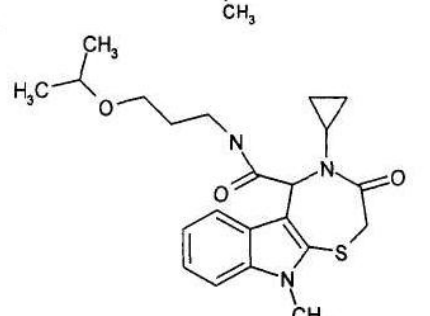
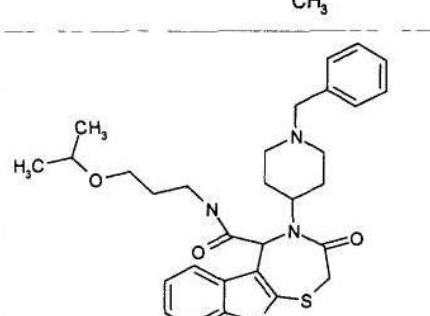
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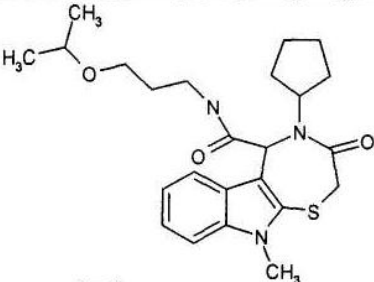
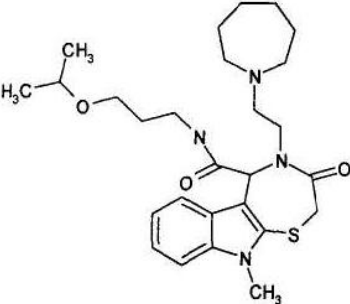
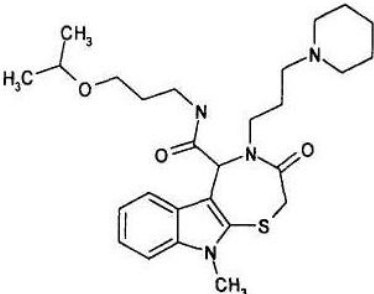
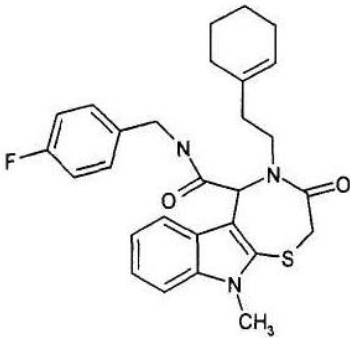
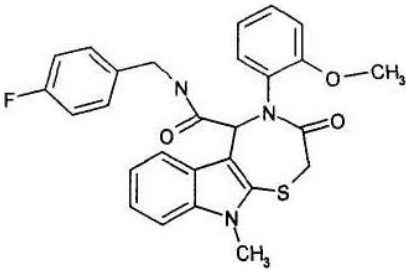
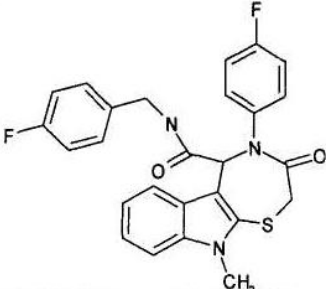
696

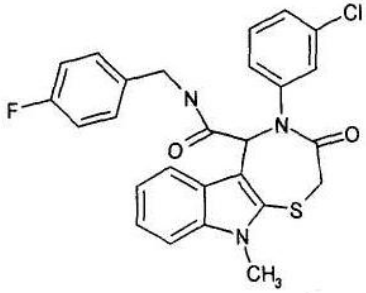
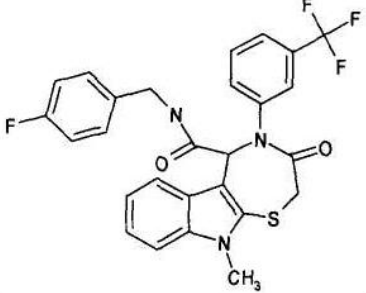
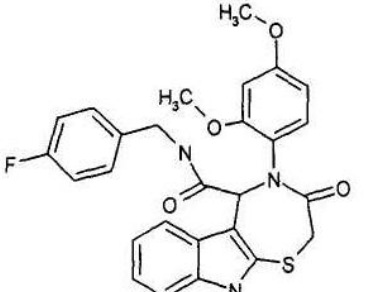
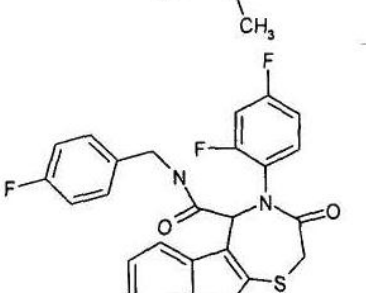
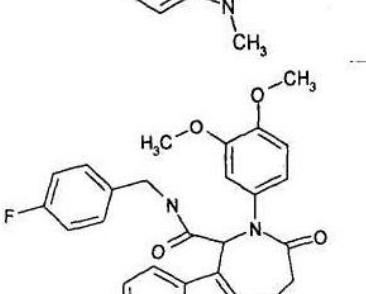
| | | | |
|-----|---|-----------|-----|
| 216 |  | 479,64636 | 480 |
| 217 |  | 495,64576 | 496 |
| 218 |  | 481,61867 | 482 |
| 219 |  | 486,03721 | 487 |
| 220 |  | 500,0643 | 501 |

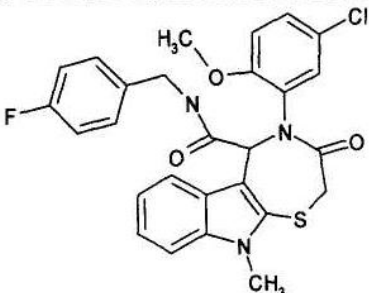
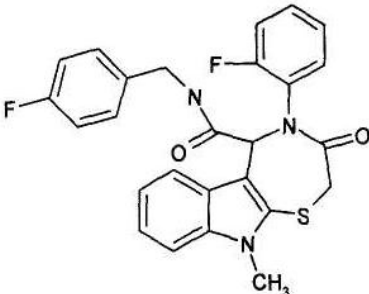
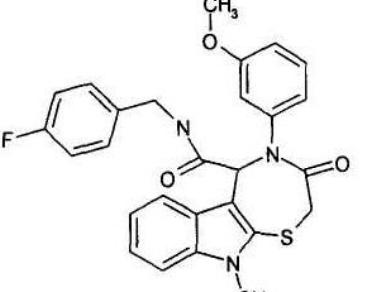
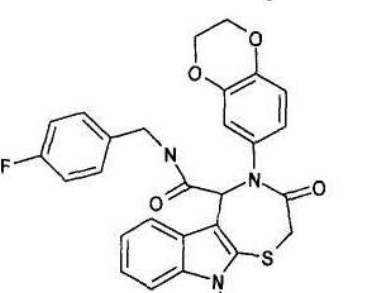
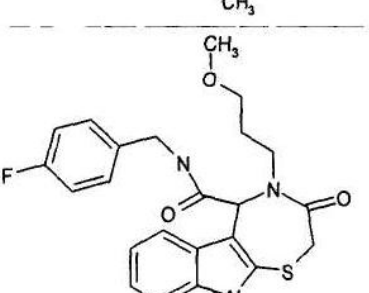
| | | | |
|-----|---|-----------|-----|
| 221 |  | 500,0643 | 501 |
| 222 |  | 523,65631 | 524 |
| 223 |  | 493,67345 | 494 |
| 224 |  | 523,69994 | 524 |
| 225 |  | 485,67212 | 486 |

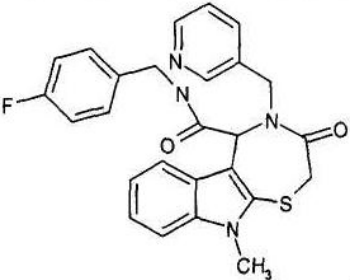
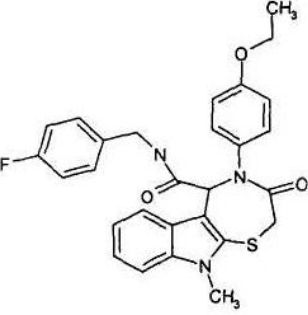
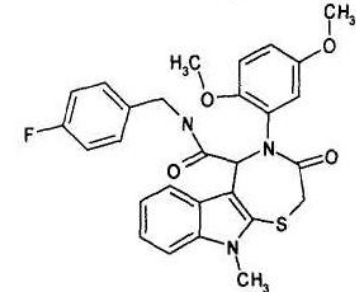
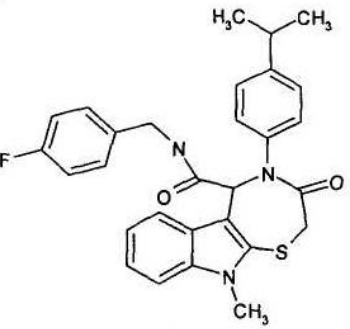
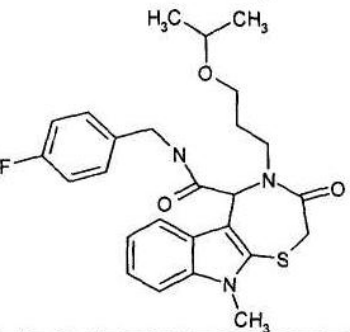
| | | | |
|-----|--|-----------|-----|
| 226 |  <chem>CC(C)OCCCN(C(=O)c1c2ccccc2n(C)c1S)C3=CC(=CC=C3C</chem> | 479,64636 | 480 |
| 227 |  <chem>CC(C)OCCCN(C(=O)c1c2ccccc2n(C)c1S)C3=CC(=CC=C3C</chem> | 479,64636 | 480 |
| 228 |  <chem>CC(C)OCCCN(C(=O)c1c2ccccc2n(C)c1S)C3=CC(=CC=C3C</chem> | 495,60213 | 496 |
| 229 |  <chem>CC(C)OCCCN(C(=O)c1c2ccccc2n(C)c1S)C3=CC(=CC=C3C</chem> | 500,0643 | 501 |
| 230 |  <chem>COc1cc(OC)ccc1N(C(=O)c2c3ccccc3n(C)c2S)C4=CC(=CC=C4C</chem> | 511,64516 | 512 |
| 231 |  <chem>COc1ccc(N(C(=O)c2c3ccccc3n(C)c2S)C4=CC(=CC=C4C</chem> | 469,58261 | 470 |

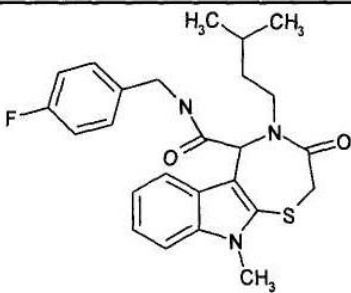
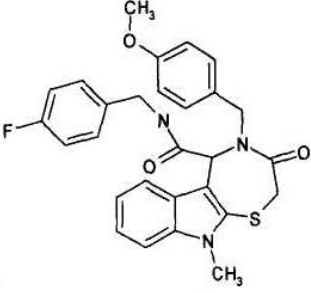
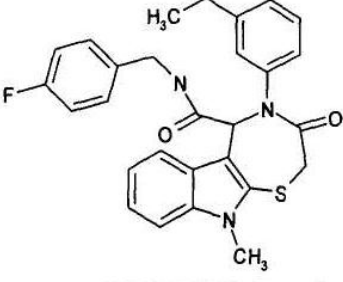
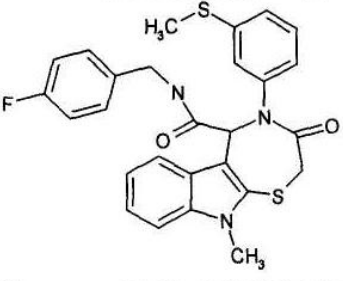
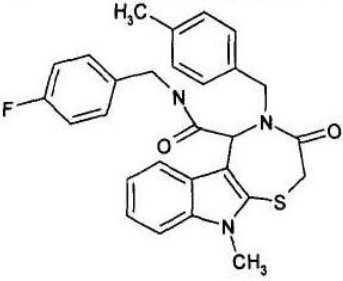
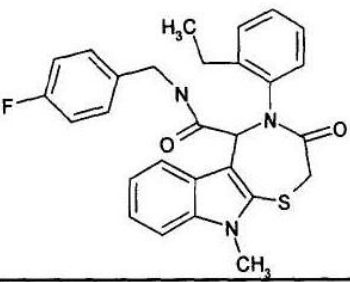
| | | | |
|-----|---|-----------|-----|
| 232 |  | 417,57467 | 418 |
| 233 |  | 488,65407 | 489 |
| 234 |  | 529,75061 | 530 |
| 235 |  | 415,55873 | 416 |
| 236 |  | 548,75345 | 549 |

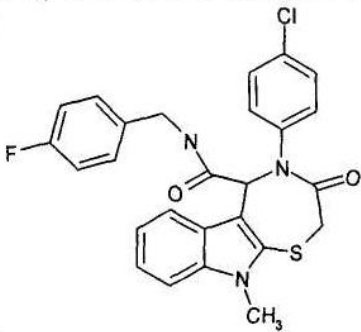
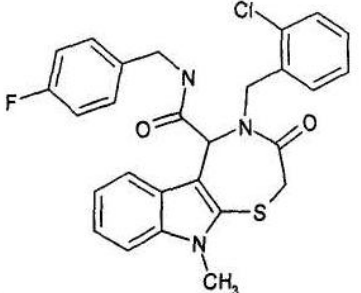
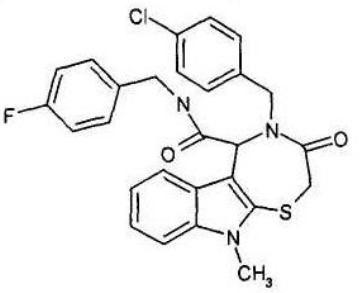
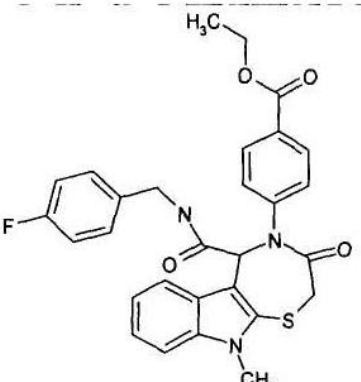
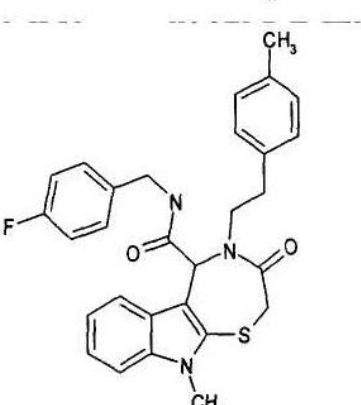
| | | | |
|-----|---|-----------|-----|
| 237 |  | 443,61291 | 444 |
| 238 |  | 500,70885 | 501 |
| 239 |  | 500,70885 | 501 |
| 240 |  | 491,6326 | 492 |
| 241 |  | 489,57303 | 490 |
| 242 |  | 477,53697 | 478 |

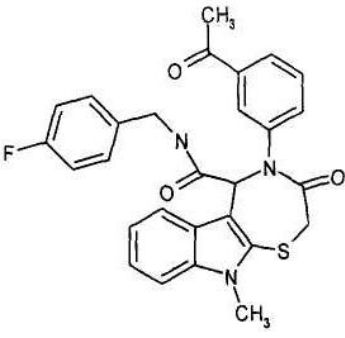
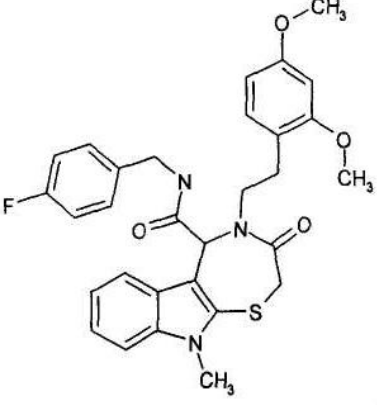
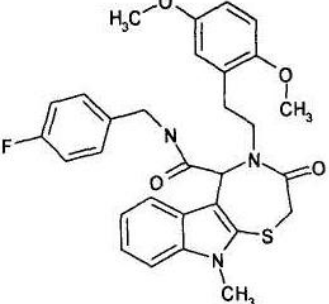
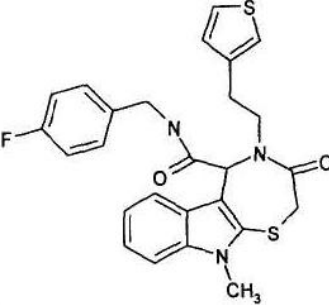
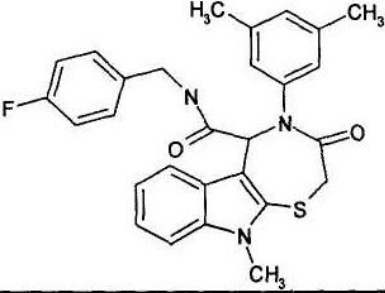
| | | | |
|-----|---|-----------|-----|
| 243 |  | 493,99157 | 494 |
| 244 |  | 527,54492 | 528 |
| 245 |  | 519,59952 | 520 |
| 246 |  | 495,5274 | 496 |
| 247 |  | 519,59952 | 520 |

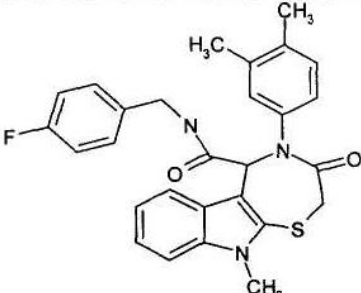
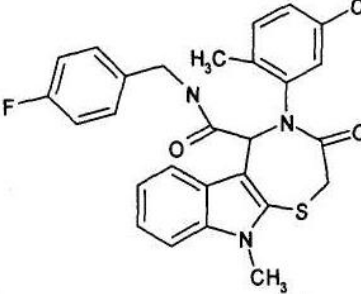
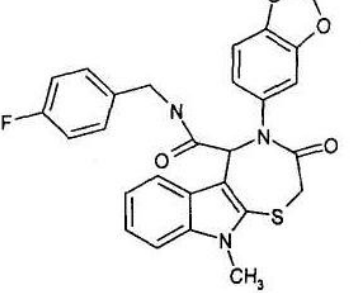
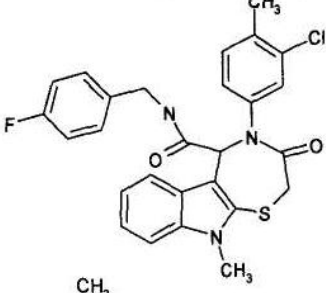
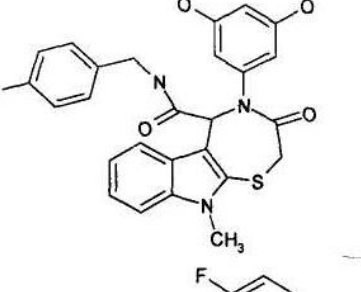
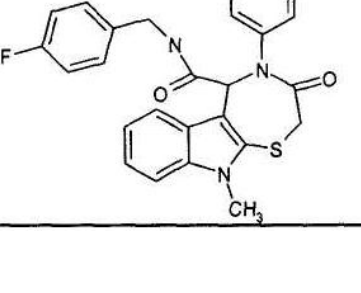
| | | | |
|-----|---|-----------|-----|
| 248 |  | 524,01806 | 525 |
| 249 |  | 477,53697 | 478 |
| 250 |  | 489,57303 | 490 |
| 251 |  | 517,58358 | 518 |
| 252 |  | 455,55552 | 456 |

| | | | |
|-----|---|-----------|-----|
| 253 |  | 474,56121 | 475 |
| 254 |  | 503,60012 | 504 |
| 255 |  | 519,59952 | 520 |
| 256 |  | 501,62781 | 502 |
| 257 |  | 483,6097 | 484 |

| | | | |
|-----|---|-----------|-----|
| 258 |  | 453,58321 | 454 |
| 259 |  | 503,60012 | 504 |
| 260 |  | 487,60072 | 488 |
| 261 |  | 505,63763 | 506 |
| 262 |  | 487,60072 | 488 |
| 263 |  | 487,60072 | 488 |

| | | | |
|-----|---|-----------|-----|
| 264 |  | 493,99157 | 494 |
| 265 |  | 508,01866 | 509 |
| 266 |  | 508,01866 | 509 |
| 267 |  | 531,61067 | 532 |
| 268 |  | 501,62781 | 502 |

| | | | |
|-----|---|-----------|-----|
| 269 |  | 501,58418 | 502 |
| 270 |  | 547,6537 | 548 |
| 271 |  | 547,6537 | 548 |
| 272 |  | 493,62648 | 494 |
| 273 |  | 487,60072 | 488 |

| | | | |
|-----|---|-----------|-----|
| 274 |  | 487,60072 | 488 |
| 275 |  | 487,60072 | 488 |
| 276 |  | 503,55649 | 504 |
| 277 |  | 508,01866 | 509 |
| 278 |  | 519,59952 | 520 |
| 279 |  | 477,53697 | 478 |

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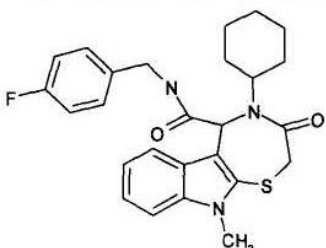
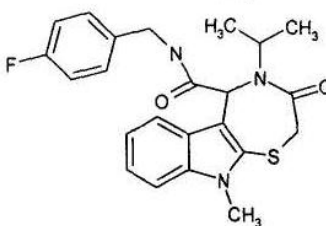
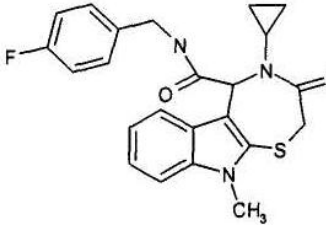
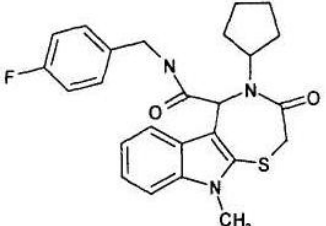
| | | | |
|-----|--|-----------|-----|
| 280 |  | 465,59436 | 466 |
| 281 |  | 425,52903 | 426 |
| 282 |  | 423,51309 | 424 |
| 283 |  | 451,56727 | 452 |

Таблица 1.12

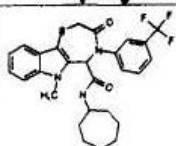
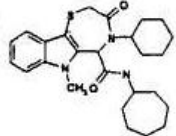
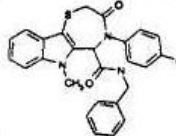
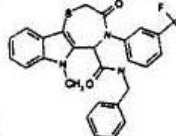
| № п.п. | Формула | Мол. масса | Мас -спектр, m/z (M+1) |
|--------|---|------------|------------------------|
| 1 |  | 515,60231 | 516 |
| 2 |  | 453,65175 | 454 |
| 3 |  | 471,5826 | 472 |
| 4 |  | 509,55449 | 510 |

Таблица 1.13

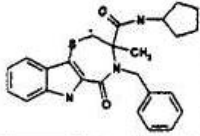
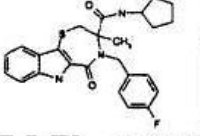
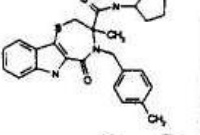
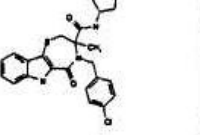
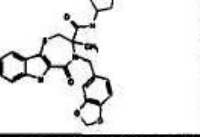
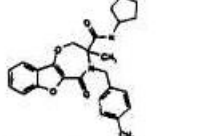
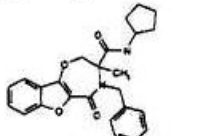
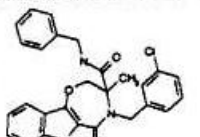
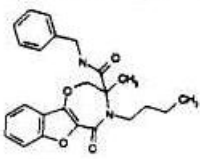
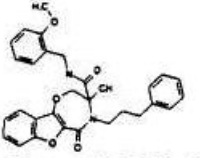
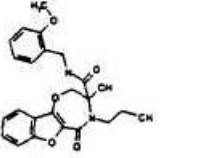
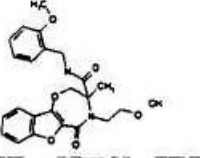
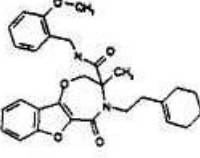
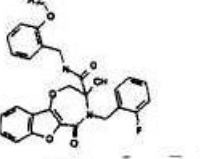
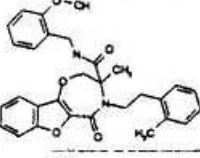
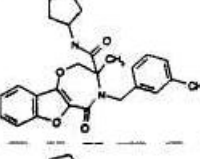
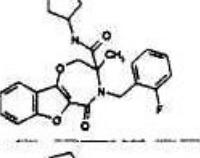
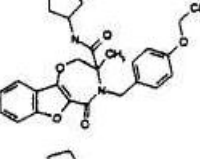
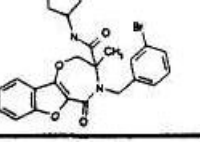
| № п.п. | Формула | Мол. масса | Мас -спектр, m/z (M+1) |
|--------|--|------------|------------------------|
| 1 |  | 433,57684 | 434 |
| 2 |  | 451,56727 | 452 |
| 3 |  | 447,60393 | 448 |
| 4 |  | 468,02187 | 469 |
| 5 |  | 477,58679 | 478 |

Таблица 1.14

| № п.п. | Формула | Мол. масса | Мас -спектр, m/z (M+1) |
|--------|---|------------|------------------------|
| 1 |  | 432,5241 | 433 |
| 2 |  | 418,497 | 419 |
| 3 |  | 474,9484 | 475 |

| | | | |
|----|---|----------|-----|
| 4 |  | 406,4858 | 407 |
| 5 |  | 498,584 | 499 |
| 6 |  | 422,4852 | 423 |
| 7 |  | 438,4846 | 439 |
| 8 |  | 488,5888 | 489 |
| 9 |  | 488,5203 | 489 |
| 10 |  | 498,584 | 499 |
| 11 |  | 432,5241 | 433 |
| 12 |  | 436,4874 | 437 |
| 13 |  | 462,5506 | 463 |
| 14 |  | 497,393 | 498 |

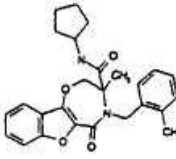
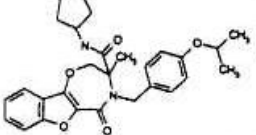
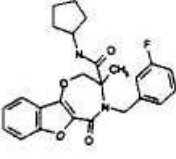
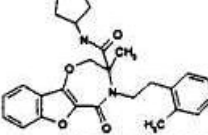
| | | | |
|----|---|----------|-----|
| 15 |  | 432,5241 | 433 |
| 16 |  | 476,5776 | 477 |
| 17 |  | 436,4874 | 437 |
| 18 |  | 446,5512 | 447 |

Таблица I.15

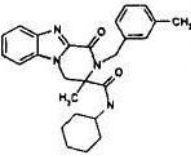
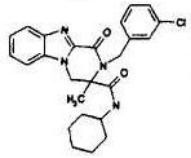
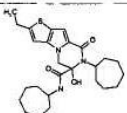
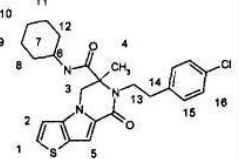
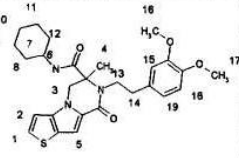
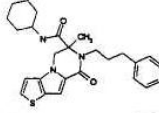
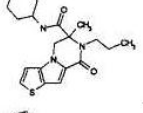
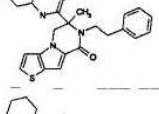
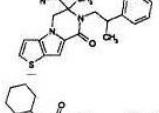
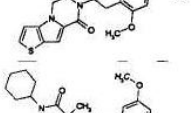
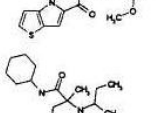
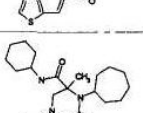
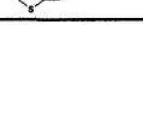
| № п.п. | Формула | Мол.масса | Мас -спектр, m/z (M+1) | ПМР спектр |
|--------|---|-----------|---------------------------|--|
| 1 |  | 430,5546 | 431 | 0 88-1 22 m (5H, cyclohexyl), 1 28-1 38 m (1H, cyclohexyl), 1 42-4 66 m (4H, cyclohexyl), 1 58 s (3H, CH ₃), 2 34 s (3H, CH ₃ , m-CH ₃ -Pn), 3 38 m (1H, CH, cyclohexyl), 4 20, 5 01 dd (2H, CH ₂ , N-CH ₂ -Phm, J=16 4Hz), 4 27,5 01 dd (2H, CH ₂ , cycle, J=13) |
| 2 |  | 450,9725 | 451 | 0 87-1 30 m (6H, cyclohexyl), 1 46-1 71 m (4H, cyclohexyl), 1 60 s (3H, CH ₃) 3 37 m (1H, CH, cyclohexyl), 4 26, 5 36 dd (2H, CH ₂ , N-CH ₂ -Phm, J=16 8Hz), 4 39, 5 02 dd (2H, CH ₂ , cycle, J=13 6Hz), 7 22 m (1H, CH, Aryl), 7 25-7 33 m (3H, 3CH, Aryl), |

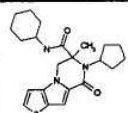
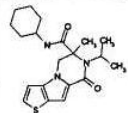
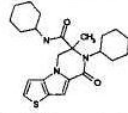
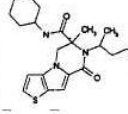
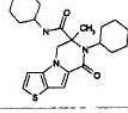
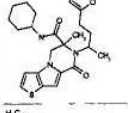
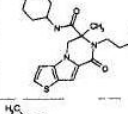
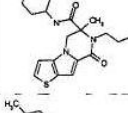
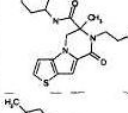
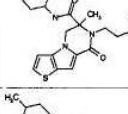
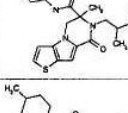
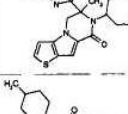
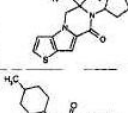
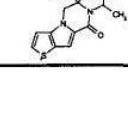
Таблица 1.16(1)

| № п.п. | Формула | Мол.масса | Мас -спектр, m/z (M+1) | ПМР спектр |
|--------|---|-----------|---------------------------|--|
| 1 |  | 469,6948 | 470 | |
| 2 |  | 470,0378 | 471 | 1.01 - 1.74 (8, 9, 10, 11, 12; 10H; m), 1.50 (4, 3H, s.), 2.94 (14; 2H; m.), 3.32 + 3.76 (13; 2H; m., m.), 3.51 (7; 1 H; b.m.), 4.08 + 4.73 (3; 2H; AB; 12.8 Hz), 6.95 (5, 1H; s.), 7.01 (2; 1H; d.; 5.3 Hz), 7.27 (6, 15, 16; 5H; m.), 7.39 (1; 1H; d.;... |
| 3 |  | 495,6458 | 496 | 0.96 - 1.72 (8, 9, 10, 11, 12; 10H; m.), 1.49 (4, 3H, s), 2.85 (14; 2H; m.), 3.31 + 3.75 (13; 2H; m., m.), 3.51 (7; 1 H; b m), 3.77 (16, 17; 6H; s., s.), 4.03 + 4.73 (3, 2H; AB; 12.7 Hz), 6.70 - 6.79 (15, 18, 19, 3H; m.), 6.95 (5; 1H; s), 6.99 (2;... |
| 4 |  | 449,6199 | 450 | |
| 5 |  | 373,5211 | 374 | |
| 6 |  | 435,5928 | 436 | |
| 7 |  | 449,6199 | 450 | |
| 8 |  | 495,6458 | 496 | |
| 9 |  | 495,6458 | 496 | |
| 10 |  | 387,5482 | 388 | |
| 11 |  | 427,6135 | 428 | |

729

84447

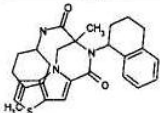
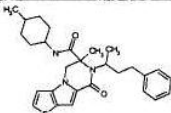
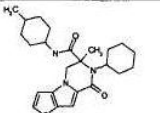
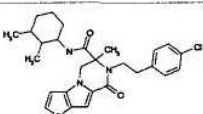
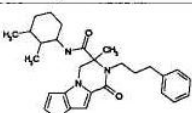
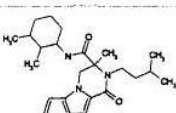
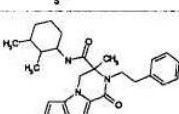
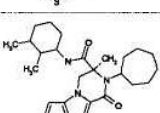
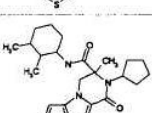
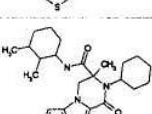
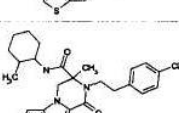
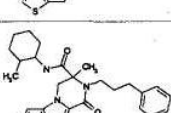
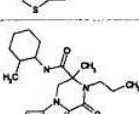
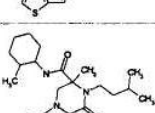
730

| | | | | |
|----|---|----------|-----|--|
| 12 |  | 399,5593 | 400 | |
| 13 |  | 373,5211 | 374 | |
| 14 |  | 427,6135 | 428 | |
| 15 |  | 463,647 | 464 | |
| 16 |  | 413,5864 | 414 | |
| 17 |  | 453,6081 | 454 | |
| 18 |  | 484,0649 | 485 | |
| 19 |  | 463,647 | 464 | |
| 20 |  | 387,5482 | 388 | |
| 21 |  | 449,6199 | 450 | |
| 22 |  | 463,647 | 464 | |
| 23 |  | 441,6406 | 442 | |
| 24 |  | 413,5864 | 414 | |
| 25 |  | 387,5482 | 388 | |

731

84447

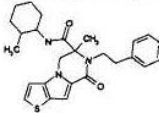
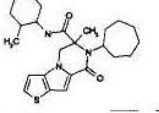
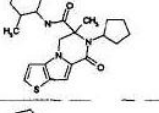
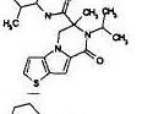
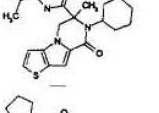
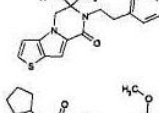
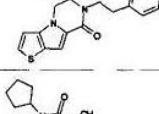
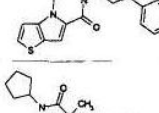
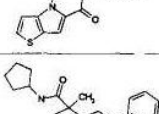
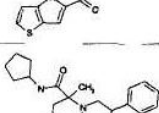
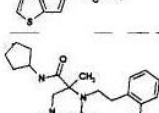
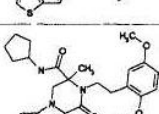
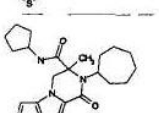
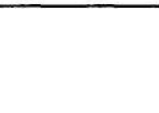
732

| | | | | |
|----|---|----------|-----|--|
| 26 |  | 475,6581 | 476 | |
| 27 |  | 477,6741 | 478 | |
| 28 |  | 427,6135 | 428 | |
| 29 |  | 498,092 | 499 | |
| 30 |  | 477,6741 | 478 | |
| 31 |  | 429,6295 | 430 | |
| 32 |  | 463,647 | 464 | |
| 33 |  | 455,6677 | 456 | |
| 34 |  | 427,6135 | 428 | |
| 35 |  | 441,6406 | 442 | |
| 36 |  | 484,0649 | 485 | |
| 37 |  | 463,647 | 464 | |
| 38 |  | 387,5482 | 388 | |
| 39 |  | 415,6024 | 416 | |

733

84447

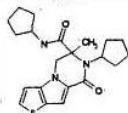
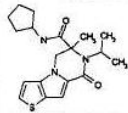
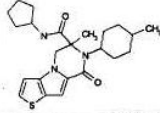
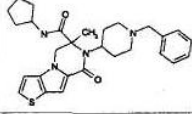
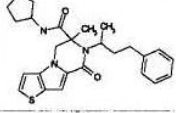
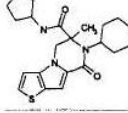
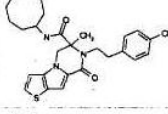
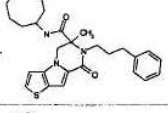
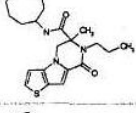
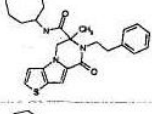
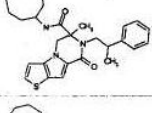
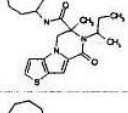
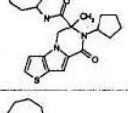
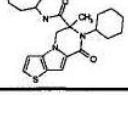
734

| | | | | |
|----|---|----------|-----|--|
| 40 |  | 449,6199 | 450 | |
| 41 |  | 441,6406 | 442 | |
| 42 |  | 413,5864 | 414 | |
| 43 |  | 387,5482 | 388 | |
| 44 |  | 427,6135 | 428 | |
| 45 |  | 456,0107 | 457 | |
| 46 |  | 481,6187 | 482 | |
| 47 |  | 435,5928 | 436 | |
| 48 |  | 359,494 | 360 | |
| 49 |  | 421,5657 | 422 | |
| 50 |  | 435,5928 | 436 | |
| 51 |  | 481,6187 | 482 | |
| 52 |  | 481,6187 | 482 | |
| 53 |  | 413,5864 | 414 | |

735

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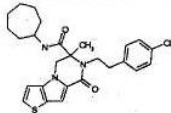
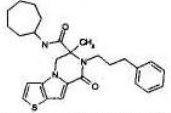
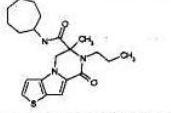
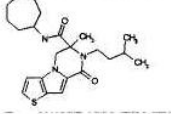
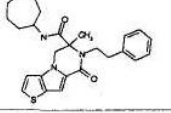
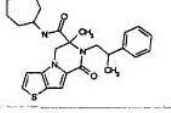
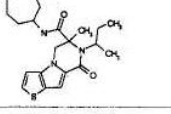
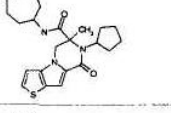
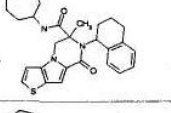
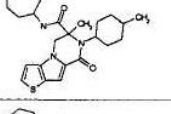
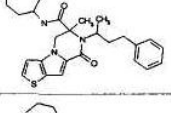
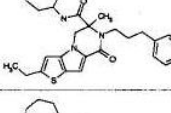
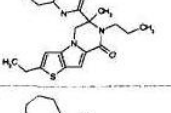
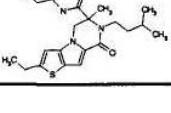
736

| | | | | |
|----|---|----------|-----|--|
| 54 |  | 385,5322 | 386 | |
| 55 |  | 359,494 | 360 | |
| 56 |  | 413,5864 | 414 | |
| 57 |  | 490,6728 | 491 | |
| 58 |  | 449,6199 | 450 | |
| 59 |  | 399,5593 | 400 | |
| 60 |  | 498,092 | 499 | |
| 61 |  | 477,6741 | 478 | |
| 62 |  | 401,5753 | 402 | |
| 63 |  | 463,647 | 464 | |
| 64 |  | 477,6741 | 478 | |
| 65 |  | 415,6024 | 416 | |
| 66 |  | 427,6135 | 428 | |
| 67 |  | 441,6406 | 442 | |

737

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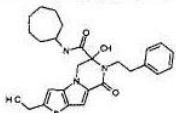
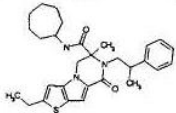
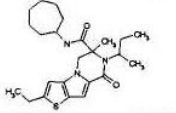
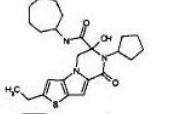
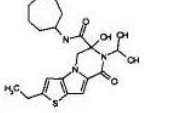
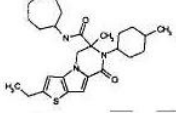
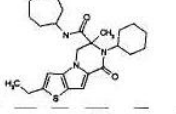
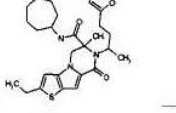
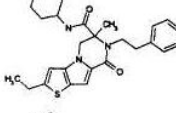
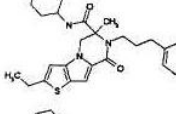
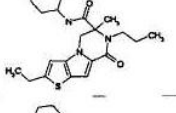
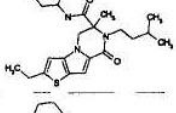
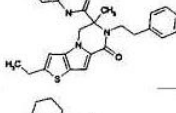
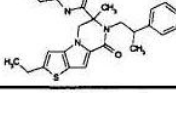
738

| | | | | |
|----|---|----------|-----|--|
| 68 |  | 484,0649 | 485 | |
| 69 |  | 463,647 | 464 | |
| 70 |  | 387,5482 | 388 | |
| 71 |  | 415,6024 | 416 | |
| 72 |  | 449,6199 | 450 | |
| 73 |  | 463,647 | 464 | |
| 74 |  | 401,5753 | 402 | |
| 75 |  | 413,5864 | 414 | |
| 76 |  | 475,6581 | 476 | |
| 77 |  | 441,6406 | 442 | |
| 78 |  | 477,6741 | 478 | |
| 79 |  | 491,7011 | 492 | |
| 80 |  | 415,6024 | 416 | |
| 81 |  | 443,6565 | 444 | |

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| | | | | |
|----|---|----------|-----|--|
| 82 |  | 477,6741 | 478 | |
| 83 |  | 491,7011 | 492 | |
| 84 |  | 429,6295 | 430 | |
| 85 |  | 441,6406 | 442 | |
| 86 |  | 415,6024 | 416 | |
| 87 |  | 469,6948 | 470 | |
| 88 |  | 455,6677 | 456 | |
| 89 |  | 495,6894 | 496 | |
| 90 |  | 498,092 | 499 | |
| 91 |  | 477,6741 | 478 | |
| 92 |  | 401,5753 | 402 | |
| 93 |  | 429,6295 | 430 | |
| 94 |  | 463,647 | 464 | |
| 95 |  | 477,6741 | 478 | |

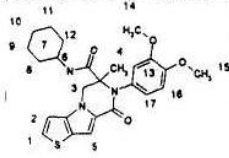
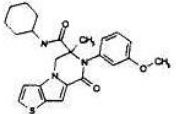
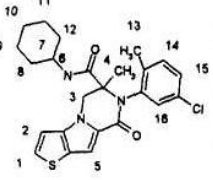
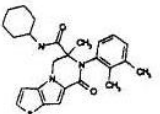
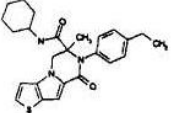
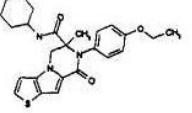
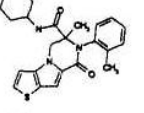
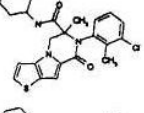
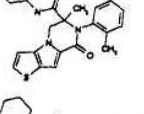
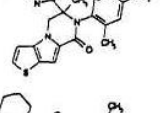
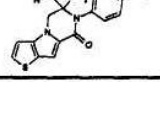
741

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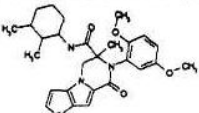
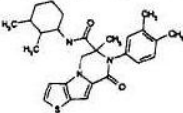
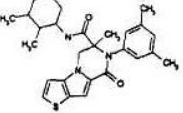
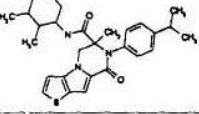
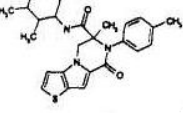
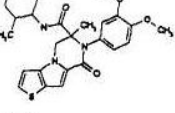
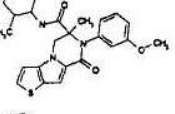
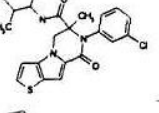
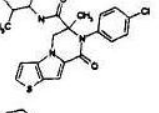
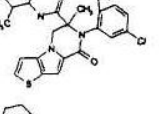
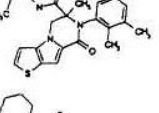
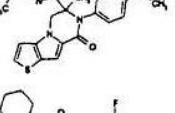
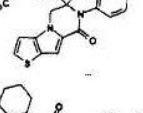
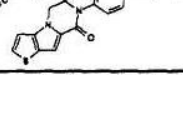
| | | | | |
|-----|--|----------|-----|--|
| 96 | | 415,6024 | 416 | |
| 97 | | 455,6677 | 456 | |
| 98 | | 427,6135 | 428 | |
| 99 | | 401,5753 | 402 | |
| 100 | | 455,6677 | 456 | |
| 101 | | 441,6406 | 442 | |
| 102 | | 491,7011 | 492 | |
| 103 | | 415,6024 | 416 | |
| 104 | | 443,6565 | 444 | |
| 105 | | 477,6741 | 478 | |
| 106 | | 491,7011 | 492 | |
| 107 | | 429,6295 | 430 | |
| 108 | | 441,6406 | 442 | |
| 109 | | 495,6894 | 496 | |

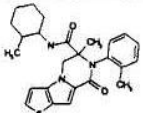
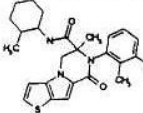
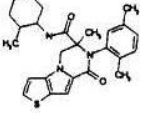
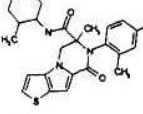
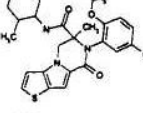
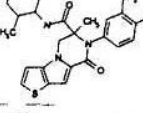
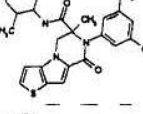
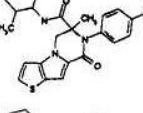
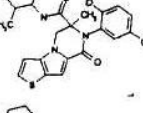
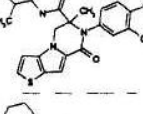
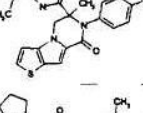
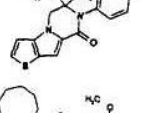
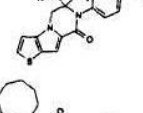
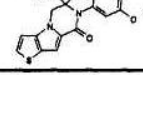
Таблица 1.16(2)

| № п.п. | Формула | Мол.масса | Мас -спектр, m/z (M+1) | ПМР спектр |
|--------|---|-----------|---------------------------|---|
| 1 |  | 467,5916 | 468 | 0.96 - 1.71 (8, 9, 10, 11, 12, 10H, m), 1.33 (4; 3H, s.), 3.47 (7, 1 H; b m), 3.80, 3.84 (14, 15; 6H; s, s), 4.27 + 4.95 (3, 2H; AB; 12.5 Hz), 6.85 (2, 13; 2H; m), 6.92 (5; 1H; s.), 6.99 (16, 17, 2H; m), 7.29 (1; 1H; d.; 5.7 Hz), 7.39 (6, 1H; ... |
| 2 |  | 437,5651 | 438 | |
| 3 |  | 456,0107 | 457 | 0.81 - 1.77 (8, 9, 10, 11, 12, 10H; m.), 1.26 (4; 3H, s.), 2.18 (13; 3H; s.), 3.47 (7; 1 H; b.m.), 4.30 + 5.07 (3; 2H; AB; 13.3 Hz), 6.93 (5; 1H; s.), 6.96 (2; 1H; d.; 5.3 Hz), 7.24 (14, 15; 2H; m), 7.34 (1, 1H, d.; 5.3 Hz), 7.59 (16; 1H; s), 7.66 |
| 4 |  | 435,5928 | 436 | |
| 5 |  | 435,5928 | 436 | |
| 6 |  | 451,5922 | 452 | |
| 7 |  | 421,5657 | 422 | |
| 8 |  | 456,0107 | 457 | |
| 9 |  | 435,5928 | 436 | |
| 10 |  | 435,5928 | 436 | |
| 11 |  | 435,5928 | 436 | |

| | | | | |
|----|--|----------|-----|--|
| 12 | | 435,5928 | 436 | |
| 13 | | 449,6199 | 450 | |
| 14 | | 472,0101 | 473 | |
| 15 | | 481,6187 | 482 | |
| 16 | | 451,5922 | 452 | |
| 17 | | 449,6199 | 450 | |
| 18 | | 465,6193 | 466 | |
| 19 | | 435,5928 | 436 | |
| 20 | | 470,0378 | 470 | |
| 21 | | 449,6199 | 450 | |
| 22 | | 449,6199 | 450 | |
| 23 | | 449,6199 | 450 | |
| 24 | | 449,6199 | 450 | |
| 25 | | 463,647 | 464 | |

| | | | | |
|----|--|----------|-----|--|
| 26 | | 486,0372 | 486 | |
| 27 | | 486,0372 | 487 | |
| 28 | | 495,6458 | 496 | |
| 29 | | 465,6193 | 466 | |
| 30 | | 470,0378 | 471 | |
| 31 | | 470,0378 | 471 | |
| 32 | | 484,0649 | 485 | |
| 33 | | 463,647 | 464 | |
| 34 | | 463,647 | 464 | |
| 35 | | 479,6464 | 480 | |
| 36 | | 449,6199 | 450 | |
| 37 | | 484,0649 | 485 | |
| 38 | | 463,647 | 464 | |
| 39 | | 463,647 | 464 | |

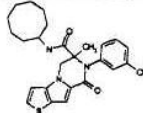
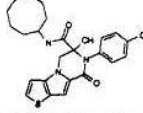
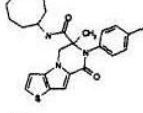
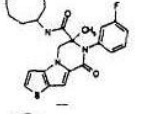
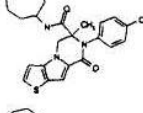
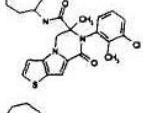
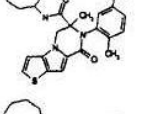
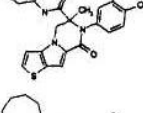
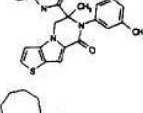
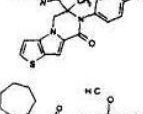
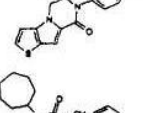
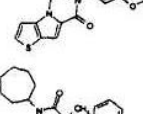
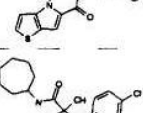
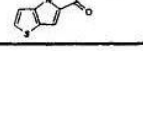
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|----|---|----------|-----|--|
| 40 |  | 495,6458 | 496 | |
| 41 |  | 463,647 | 464 | |
| 42 |  | 463,647 | 464 | |
| 43 |  | 477,6741 | 478 | |
| 44 |  | 449,6199 | 450 | |
| 45 |  | 481,6187 | 482 | |
| 46 |  | 451,5922 | 452 | |
| 47 |  | 456,0107 | 457 | |
| 48 |  | 456,0107 | 457 | |
| 49 |  | 470,0378 | 471 | |
| 50 |  | 449,6199 | 450 | |
| 51 |  | 449,6199 | 450 | |
| 52 |  | 439,5561 | 440 | |
| 53 |  | 465,6193 | 466 | |

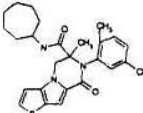
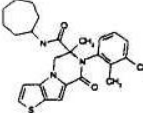
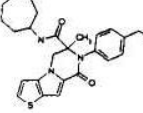
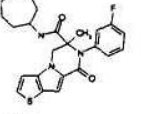
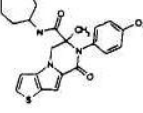
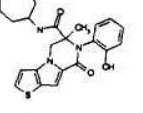
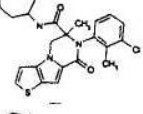
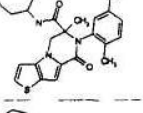
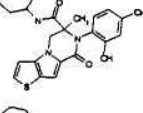
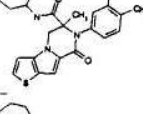
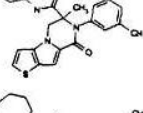
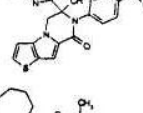
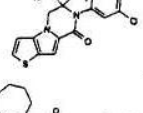
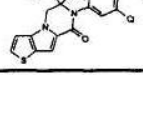
| | | | |
|----|---|----------|-----|
| 54 |  | 435,5928 | 436 |
| 55 |  | 470,0378 | 471 |
| 56 |  | 449,6199 | 450 |
| 57 |  | 449,6199 | 450 |
| 58 |  | 481,6187 | 482 |
| 59 |  | 449,6199 | 450 |
| 60 |  | 449,6199 | 450 |
| 61 |  | 463,647 | 464 |
| 62 |  | 486,0372 | 487 |
| 63 |  | 486,0372 | 487 |
| 64 |  | 435,5928 | 436 |
| 65 |  | 421,5657 | 422 |
| 66 |  | 495,6458 | 496 |
| 67 |  | 465,6193 | 466 |

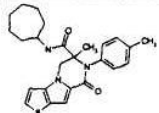
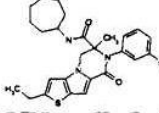
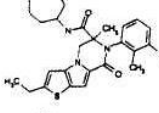
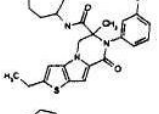
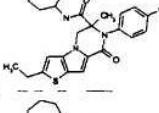
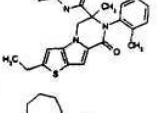
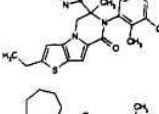
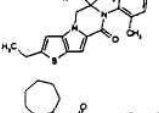
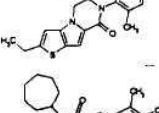
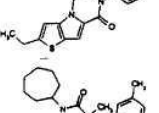
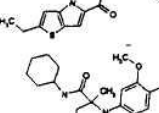
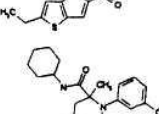
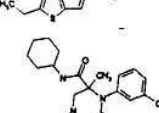
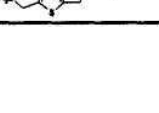
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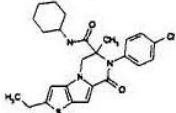
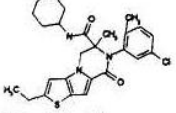
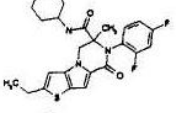
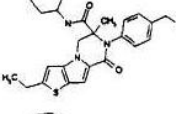
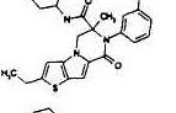
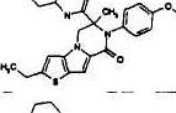
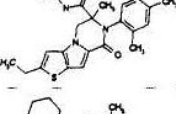
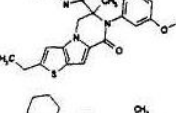
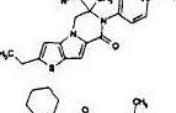
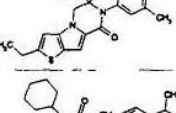
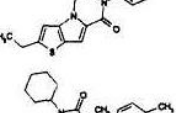
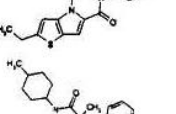
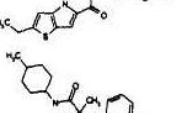
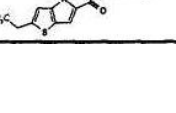
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| | | | |
|----|---|----------|-----|
| 68 |  | 470,0378 | 471 |
| 69 |  | 470,0378 | 471 |
| 70 |  | 463,647 | 464 |
| 71 |  | 453,5832 | 454 |
| 72 |  | 479,6464 | 480 |
| 73 |  | 484,0649 | 485 |
| 74 |  | 463,647 | 464 |
| 75 |  | 463,647 | 464 |
| 76 |  | 463,647 | 464 |
| 77 |  | 449,6199 | 450 |
| 78 |  | 481,6187 | 482 |
| 79 |  | 451,5922 | 452 |
| 80 |  | 456,0107 | 457 |
| 81 |  | 456,0107 | 457 |

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|----|---|----------|-----|--|
| 82 |  | 470,0378 | 471 | |
| 83 |  | 449,6199 | 450 | |
| 84 |  | 449,6199 | 450 | |
| 85 |  | 439,5561 | 440 | |
| 86 |  | 465,6193 | 466 | |
| 87 |  | 435,5928 | 436 | |
| 88 |  | 470,0378 | 471 | |
| 89 |  | 449,6199 | 450 | |
| 90 |  | 449,6199 | 450 | |
| 91 |  | 449,6199 | 450 | |
| 92 |  | 449,6199 | 450 | |
| 93 |  | 463,647 | 464 | |
| 94 |  | 486,0372 | 487 | |
| 95 |  | 486,0372 | 487 | |

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|-----|---|----------|-----|--|
| 96 |  | 435,5928 | 436 | |
| 97 |  | 479,6464 | 480 | |
| 98 |  | 477,6741 | 478 | |
| 99 |  | 467,6103 | 468 | |
| 100 |  | 493,6735 | 494 | |
| 101 |  | 463,647 | 464 | |
| 102 |  | 498,092 | 499 | |
| 103 |  | 477,6741 | 478 | |
| 104 |  | 477,6741 | 478 | |
| 105 |  | 477,6741 | 478 | |
| 106 |  | 477,6741 | 478 | |
| 107 |  | 495,6458 | 496 | |
| 108 |  | 465,6193 | 466 | |
| 109 |  | 470,0378 | 471 | |

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|-----|---|----------|-----|--|
| 110 |  | 470,0378 | 471 | |
| 111 |  | 484,0649 | 485 | |
| 112 |  | 471,5736 | 472 | |
| 113 |  | 463,647 | 464 | |
| 114 |  | 453,5832 | 454 | |
| 115 |  | 479,6464 | 480 | |
| 116 |  | 463,647 | 464 | |
| 117 |  | 495,6458 | 496 | |
| 118 |  | 463,647 | 464 | |
| 119 |  | 463,647 | 464 | |
| 120 |  | 477,6741 | 478 | |
| 121 |  | 449,6199 | 450 | |
| 122 |  | 479,6464 | 480 | |
| 123 |  | 484,0649 | 485 | |

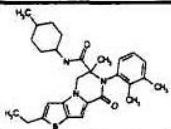
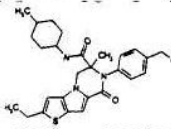
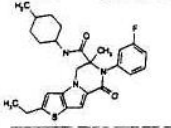
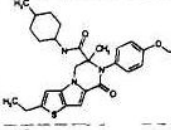
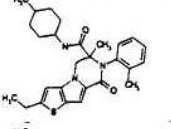
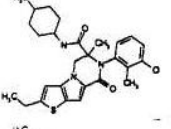
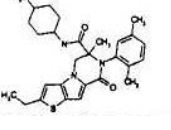
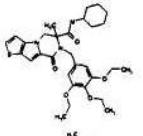
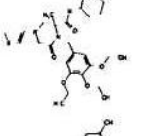
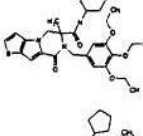
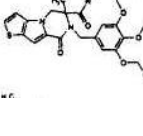
| | 761 | 84447 | 762 |
|-----|---|----------|-----|
| 124 |  | 477,6741 | 478 |
| 125 |  | 477,6741 | 478 |
| 126 |  | 467,6103 | 468 |
| 127 |  | 493,6735 | 494 |
| 128 |  | 463,647 | 464 |
| 129 |  | 498,092 | 499 |
| 130 |  | 477,6741 | 478 |

Таблица 1.16(3)

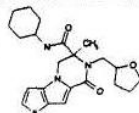
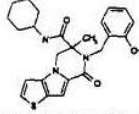
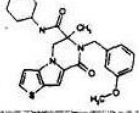
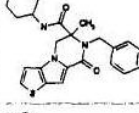
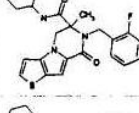
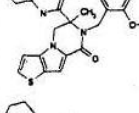
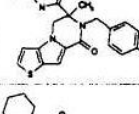
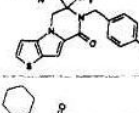
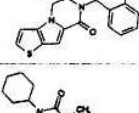
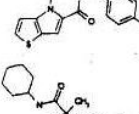
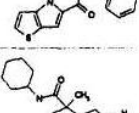
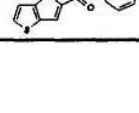
| № п.п. | Формула | Мол.маса | Мас -спектр, m/z (M+1) | ПМР спектр |
|--------|---|-----------|---------------------------|------------|
| 1 |  | 553,72643 | 554 | |
| 2 |  | 567,75352 | 568 | |
| 3 |  | 567,75352 | 568 | |
| 4 |  | 539,69934 | 540 | |

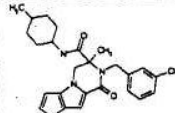
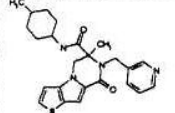
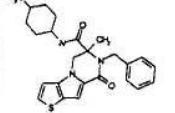
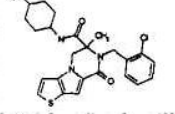
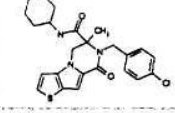
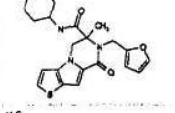
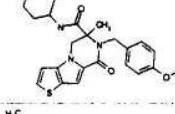
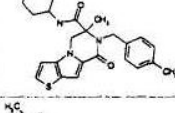
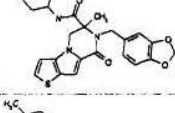
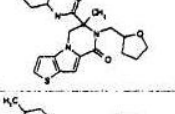
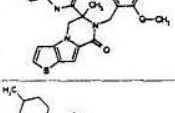
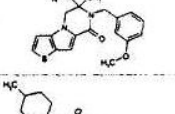
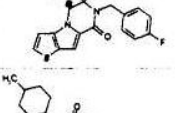
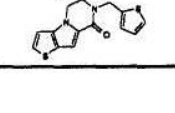
| 763 | | 84447 | | 764 |
|-----|--|-----------|-----|--|
| 5 | | 493,67345 | 494 | |
| 6 | | 456,01072 | 457 | |
| 7 | | 422,55327 | 423 | |
| 8 | | 421,56569 | 422 | 0 86 - 1 66 (8, 9, 10, 11, 12, 10H, m), 1 48 (4, 3H, s), 3 41 (7, 1 H, b m), 4 06 + 4 87 (3, 2H, AB, 13 3 Hz), 4 27 + 5 31 (13, 2H, AB, 15 6 Hz), 6 98 (2, 5, 2H, m), 7 20 (6, 1H, d, 8 0 Hz), 7 30 (1, 14, 15, 16, 6H, m) |
| 9 | | 456,01072 | 457 | |
| 10 | | 456,01072 | 457 | |
| 11 | | 411,52685 | 412 | |
| 12 | | 451,59218 | 452 | |
| 13 | | 435,59278 | 436 | |
| 14 | | 465,57564 | 466 | |

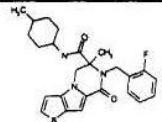
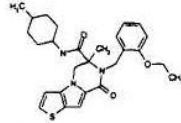
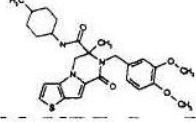
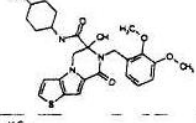
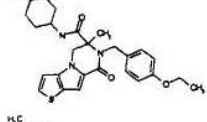
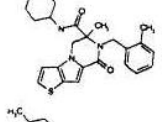
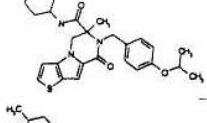
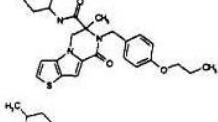
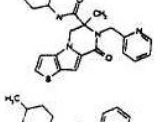
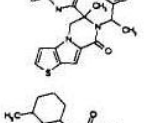
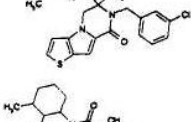
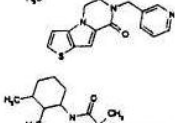
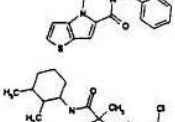
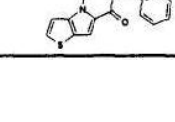
765

84447

766

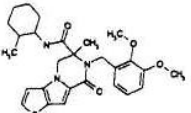
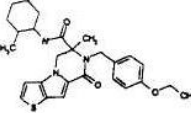
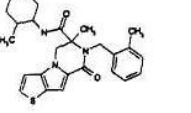
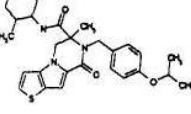
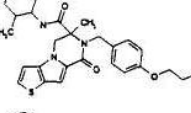
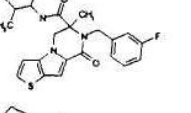
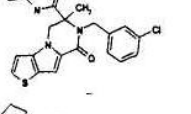
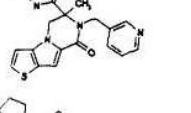
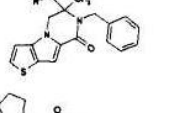
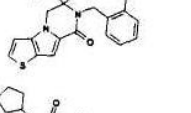
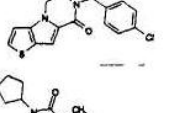
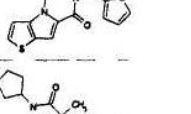
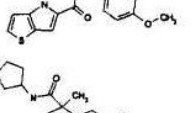
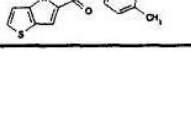
| | | | | |
|----|---|-----------|-----|--|
| 15 |  | 415,55873 | 416 | |
| 16 |  | 451,59218 | 452 | |
| 17 |  | 451,59218 | 452 | |
| 18 |  | 439,55612 | 440 | |
| 19 |  | 439,55612 | 440 | |
| 20 |  | 465,61927 | 466 | |
| 21 |  | 481,61867 | 482 | |
| 22 |  | 465,61927 | 466 | |
| 23 |  | 435,59278 | 436 | |
| 24 |  | 479,64636 | 480 | |
| 25 |  | 439,55612 | 440 | |
| 26 |  | 422,55327 | 423 | |

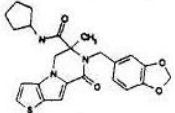
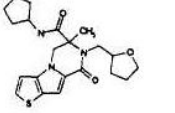
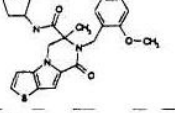
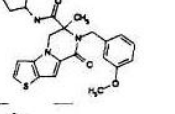
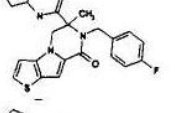
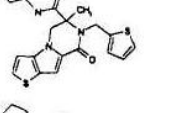
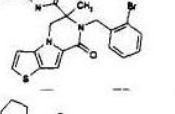
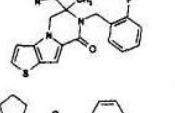
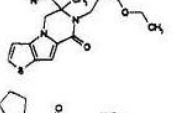
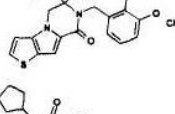
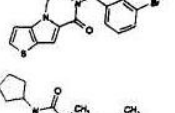
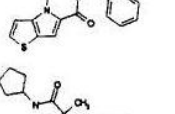
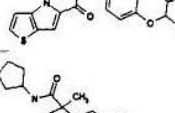
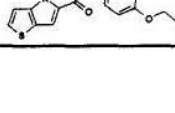
| | | | | |
|----|---|-----------|-----|--|
| 27 |  | 470,03781 | 471 | |
| 28 |  | 436,58036 | 437 | |
| 29 |  | 435,59278 | 436 | |
| 30 |  | 470,03781 | 471 | |
| 31 |  | 470,03781 | 471 | |
| 32 |  | 425,55394 | 426 | |
| 33 |  | 465,61927 | 466 | |
| 34 |  | 449,61987 | 450 | |
| 35 |  | 479,60273 | 480 | |
| 36 |  | 429,58582 | 430 | |
| 37 |  | 465,61927 | 466 | |
| 38 |  | 465,61927 | 466 | |
| 39 |  | 453,58321 | 454 | |
| 40 |  | 441,61854 | 442 | |

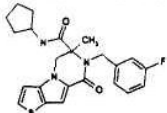
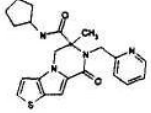
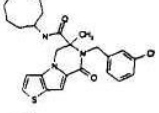
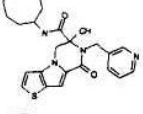
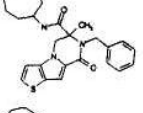
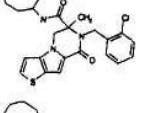
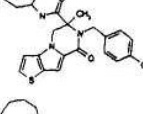
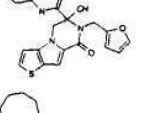
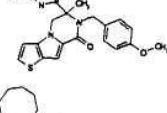
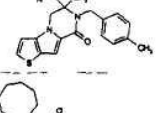
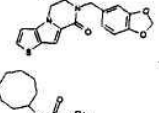
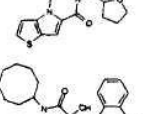
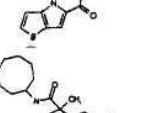
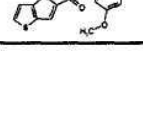
| | | | |
|----|---|-----------|-----|
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| 42 |  | 479,64636 | 480 |
| 43 |  | 495,64576 | 496 |
| 44 |  | 495,64576 | 496 |
| 45 |  | 479,64636 | 480 |
| 46 |  | 449,61987 | 450 |
| 47 |  | 493,67345 | 494 |
| 48 |  | 493,67345 | 494 |
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| 50 |  | 449,61987 | 450 |
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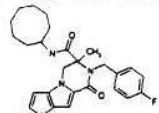
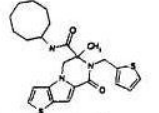
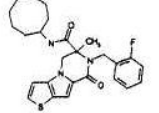
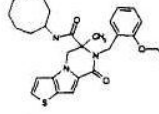
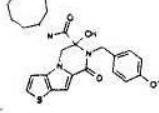
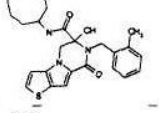
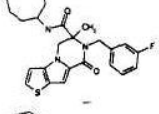
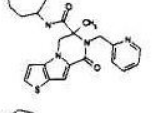
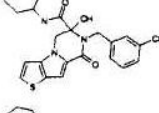
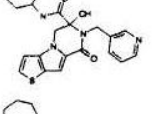
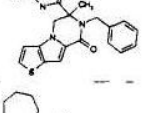
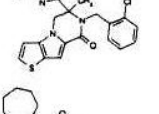
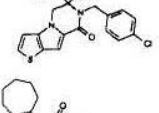
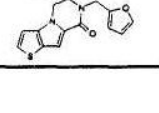
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| 61 | | 467,6103 | 468 | |
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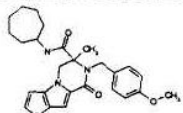
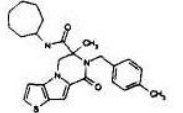
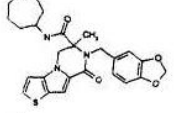
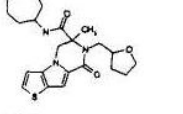
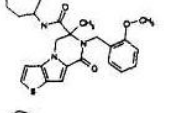
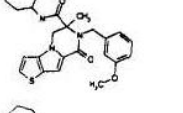
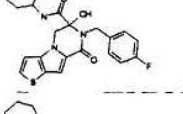
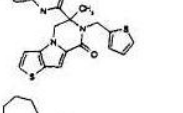
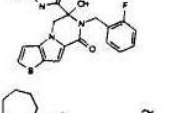
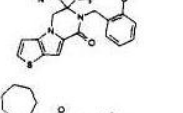
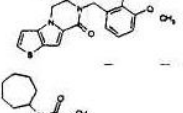
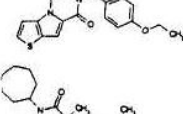
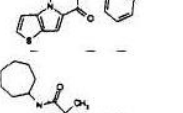
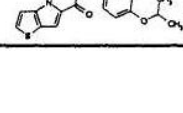
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| 74 | | 425,55394 | 426 |
| 75 | | 465,61927 | 466 |
| 76 | | 449,61987 | 450 |
| 77 | | 479,60273 | 480 |
| 78 | | 465,61927 | 466 |
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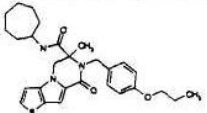
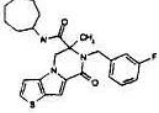
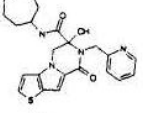
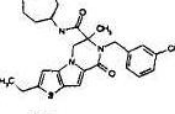
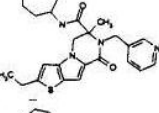
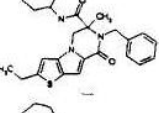
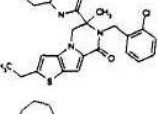
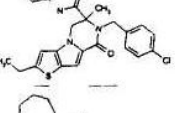
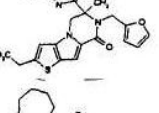
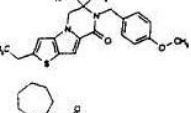
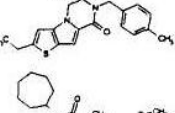
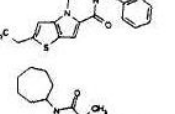
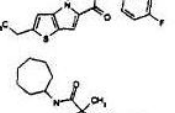
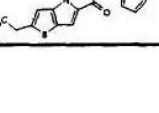
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| 88 |  | 453,58321 | 454 |
| 89 |  | 441,98363 | 442 |
| 90 |  | 408,52618 | 409 |
| 91 |  | 407,5386 | 408 |
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| 93 |  | 441,98363 | 442 |
| 94 |  | 397,49976 | 397 |
| 95 |  | 437,56509 | 438 |
| 96 |  | 421,56569 | 422 |

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| 99 |  | 437,56509 | 438 |
| 100 |  | 437,56509 | 438 |
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| 103 |  | 486,43463 | 487 |
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| 105 |  | 451,59218 | 452 |
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| 112 |  | 408,52618 | 409 | |
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| 121 |  | 493,62982 | 494 | |
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| 128 |  | 493,67345 | 494 |
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| 132 |  | 450,60745 | 451 |
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| 138 |  | 425,55394 | 426 |

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| 143 |  | 465,61927 | 466 |
| 144 |  | 465,61927 | 466 |
| 145 |  | 453,58321 | 454 |
| 146 |  | 441,61854 | 442 |
| 147 |  | 453,58321 | 454 |
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| 149 |  | 495,64576 | 496 |
| 150 |  | 479,64636 | 480 |
| 151 |  | 449,61987 | 450 |
| 152 |  | 493,67345 | 494 |

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| 154 |  | 453,58321 | 454 |
| 155 |  | 436,58036 | 437 |
| 156 |  | 498,09199 | 499 |
| 157 |  | 464,63454 | 465 |
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| 160 |  | 498,09199 | 499 |
| 161 |  | 453,60812 | 454 |
| 162 |  | 493,67345 | 494 |
| 163 |  | 477,67405 | 478 |
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| 165 |  | 481,63739 | 482 |
| 166 |  | 469,67272 | 470 |

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| 171 | | 477,67405 | 478 |
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| 173 | | 484,0649 | 485 |
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| 176 | | 484,0649 | 485 |
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| 179 | | 479,64636 | 480 |
| 180 | | 463,64696 | 464 |

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| 182 | | 443,61291 | 444 |
| 183 | | 479,64636 | 480 |
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| 185 | | 467,6103 | 468 |
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| 188 | | 493,67345 | 494 |
| 189 | | 493,67345 | 494 |
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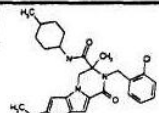
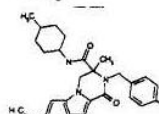
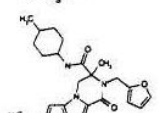
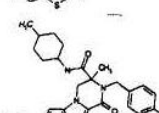
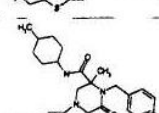
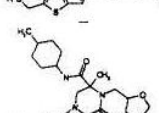
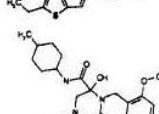
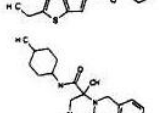
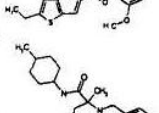
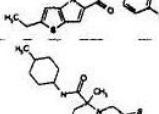
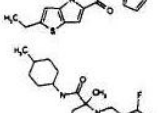
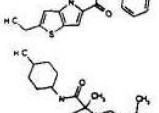
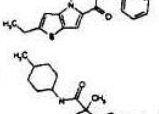
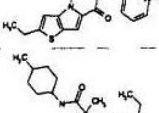
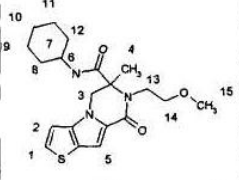
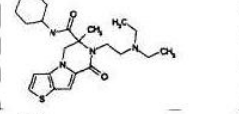
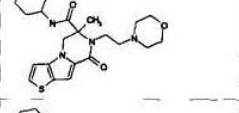
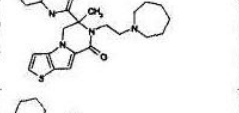
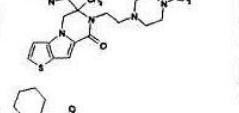
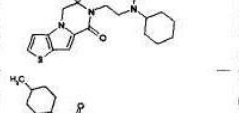
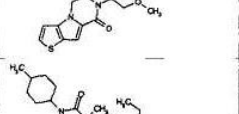
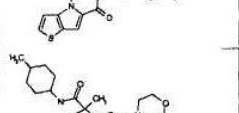
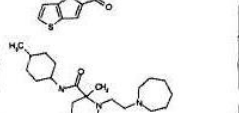
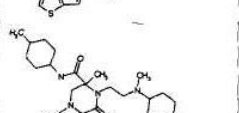
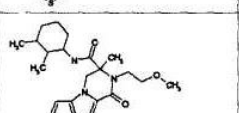

| | | | |
|-----|---|-----------|-----|
| 195 |  | 498,09199 | 499 |
| 196 |  | 498,09199 | 499 |
| 197 |  | 453,60812 | 454 |
| 198 |  | 493,67345 | 494 |
| 199 |  | 477,67405 | 478 |
| 200 |  | 457,64 | 458 |
| 201 |  | 493,67345 | 494 |
| 202 |  | 493,67345 | 494 |
| 203 |  | 481,63739 | 482 |
| 204 |  | 469,67272 | 470 |
| 205 |  | 481,63739 | 482 |
| 206 |  | 477,67405 | 478 |
| 207 |  | 481,63739 | 482 |
| 208 |  | 484,70945 | 485 |

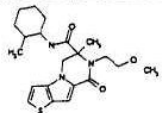
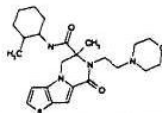
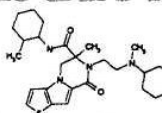
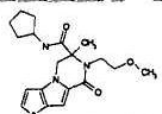
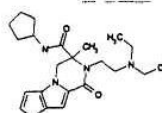
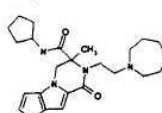
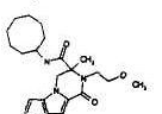
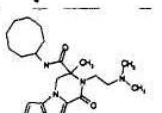
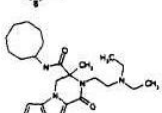
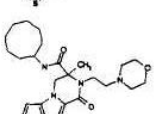
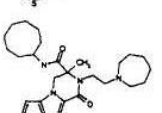
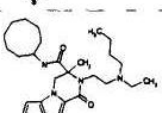
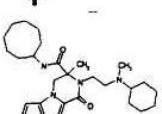
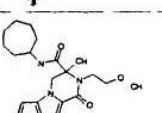
Таблица 1.16(4)

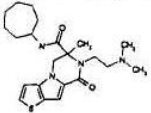
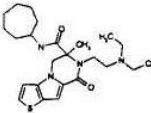
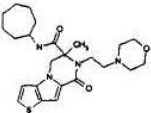
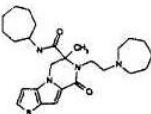
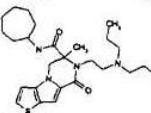
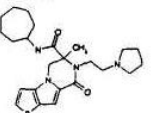
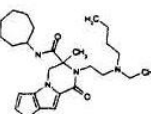
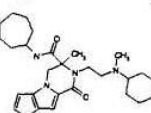
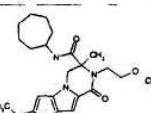
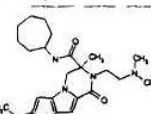
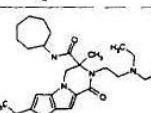
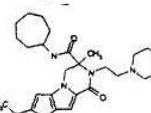
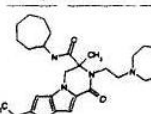
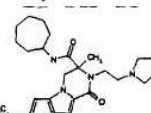
| № п.п. | Формула | Мол.масса | Мас-спектр, m/z (M+1) | ПМР спектр |
|--------|---|-----------|--------------------------|--|
| 1 |  | 389,5205 | 390 | 0.95 - 1.74 (8, 9, 10, 11, 12; 10H, m), 1.60 (4, 3H, s.), 3.37 (15; 3H; s.), 3.44 (7; 1H; b.m.), 3.56 + 3.75 (13, 2H; m.m.), 3.59 (14; 2H; m), 4.03 + 4.76 (3; 2H; AB; 12.1 Hz), 6.90 (5; 1H; s.), 7.00 (2, 1H; d; 5.7 Hz), 7.28 (1; 1H; d; 5.7 Hz), |
| 2 |  | 430,617 | 431 | |
| 3 |  | 444,6005 | 445 | |
| 4 |  | 456,6553 | 457 | |
| 5 |  | 457,6429 | 458 | |
| 6 |  | 470,6824 | 471 | |
| 7 |  | 403,5476 | 404 | |
| 8 |  | 444,6441 | 445 | |
| 9 |  | 458,6276 | 459 | |
| 10 |  | 470,6824 | 471 | |
| 11 |  | 484,7095 | 485 | |
| 12 |  | 417,5747 | 418 | |

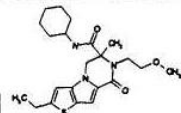
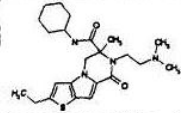
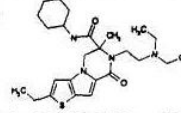
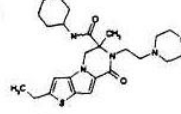
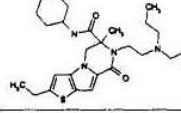
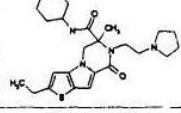
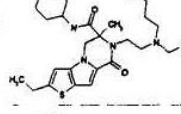
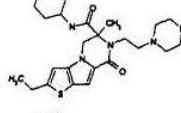
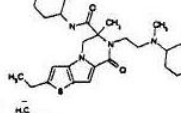
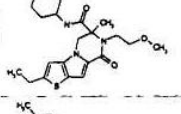
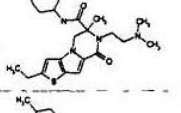
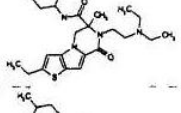
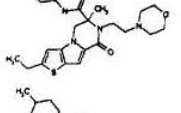
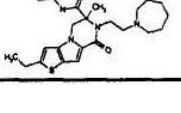
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| | | | | |
|----|---|----------|-----|--|
| 13 |  | 403,5476 | 404 | |
| 14 |  | 458,6276 | 459 | |
| 15 |  | 484,7095 | 485 | |
| 16 |  | 375,4934 | 376 | |
| 17 |  | 416,5899 | 417 | |
| 18 |  | 442,6282 | 443 | |
| 19 |  | 417,5747 | 418 | |
| 20 |  | 430,617 | 431 | |
| 21 |  | 458,6712 | 459 | |
| 22 |  | 472,6547 | 473 | |
| 23 |  | 484,7095 | 485 | |
| 24 |  | 486,7254 | 487 | |
| 25 |  | 498,7365 | 499 | |
| 26 |  | 403,5476 | 404 | |

| | | | | |
|----|---|----------|-----|--|
| 27 |  | 416,5899 | 417 | |
| 28 |  | 444,6441 | 445 | |
| 29 |  | 458,6276 | 459 | |
| 30 |  | 470,6824 | 471 | |
| 31 |  | 472,6983 | 473 | |
| 32 |  | 442,6282 | 443 | |
| 33 |  | 472,6983 | 473 | |
| 34 |  | 484,7095 | 485 | |
| 35 |  | 431,6018 | 432 | |
| 36 |  | 444,6441 | 445 | |
| 37 |  | 472,6983 | 473 | |
| 38 |  | 486,6818 | 487 | |
| 39 |  | 498,7365 | 499 | |
| 40 |  | 470,6824 | 471 | |

| | | | | |
|----|---|----------|-----|--|
| 41 |  | 417,5747 | 418 | |
| 42 |  | 430,617 | 431 | |
| 43 |  | 458,6712 | 459 | |
| 44 |  | 472,6547 | 473 | |
| 45 |  | 486,7254 | 487 | |
| 46 |  | 456,6553 | 457 | |
| 47 |  | 486,7254 | 487 | |
| 48 |  | 485,697 | 486 | |
| 49 |  | 498,7365 | 499 | |
| 50 |  | 431,6018 | 432 | |
| 51 |  | 444,6441 | 445 | |
| 52 |  | 472,6983 | 473 | |
| 53 |  | 486,6818 | 487 | |
| 54 |  | 498,7365 | 499 | |

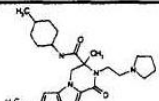
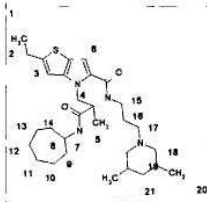
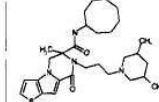
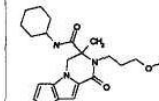
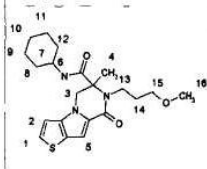
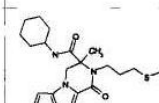
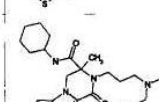
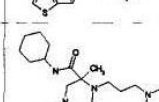
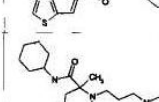
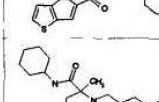
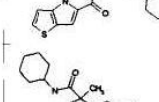
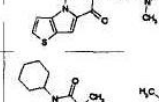
| | | | | |
|----|---|----------|-----|--|
| 55 |  | 470,6824 | 471 | |
|----|---|----------|-----|--|

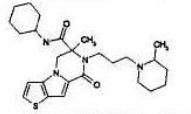
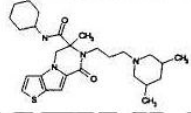
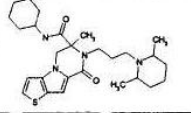
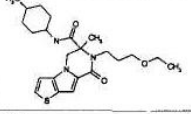
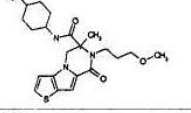
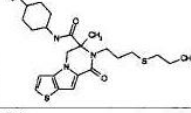
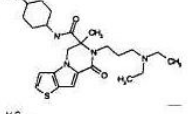
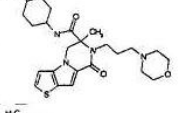
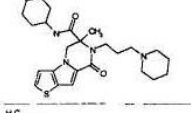
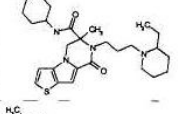
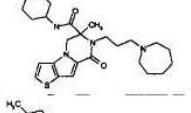
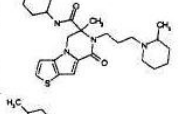
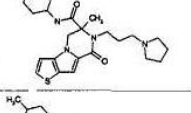
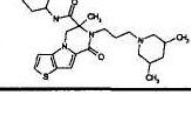
Таблица 1.16(5)

| № п.п. | Формула | Мол.масса | Мас-спектр, m/z (M+1) | ПМР спектр |
|--------|---|-----------|--------------------------|---|
| 1 |  | 526,7907 | 527 | 0.82 (20; 6H; d.; 7.1 Hz), 1.07- 1.99 (9, 10, 11, 12, 13, 14, 16, 18, 19, 21; 20H; m.), 1.36 (1; 3H; t.; 7.6 Hz), 1.58 (5; 3H; s.), 2.31 (18; 2H; m.), 2.81 (17; 2H; b.m.), 2.89 (2; 2H; d.; 7.6 Hz), 3.19 + 3.52 (15; 2H; m., m.), 3.79 (8; 1H; b.m.) |
| 2 |  | 512,7636 | 513 | |
| 3 |  | 417,5747 | 418 | |
| 4 |  | 403,5476 | 404 | 0.98 - 1.74 (8, 9, 10, 11, 12; 10H; m.), 1.58 (4; 3H; s.), 1.86 (14; 2H; m.), 3.28 (16; 3H; s.), 3.28 + 3.59 (13; 2H; m.m.), 3.39 (15; 2H; t.; 6.1 Hz), 3.47 (7; 1 H; b.m.), 4.08 + 4.72 (3; 2H; AB; 13.3 Hz), 6.88 (5; 1H; s.), 6.97 (2; 1H; d.; 5.3 Hz),. |
| 5 |  | 447,6664 | 448 | |
| 6 |  | 444,6441 | 445 | |
| 7 |  | 458,6276 | 459 | |
| 8 |  | 471,6699 | 472 | |
| 9 |  | 456,6553 | 457 | |
| 10 |  | 492,6887 | 493 | |
| 11 |  | 484,7095 | 485 | |

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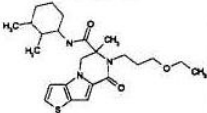
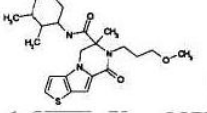
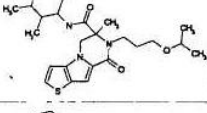
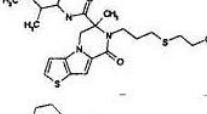
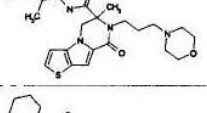
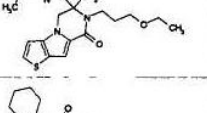
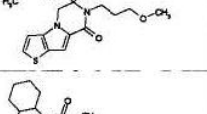
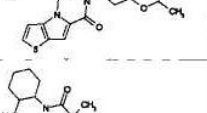
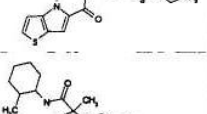
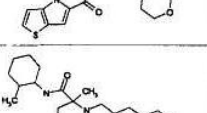
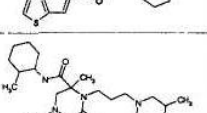
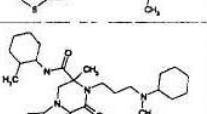
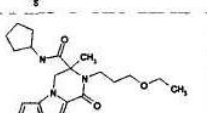
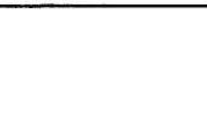
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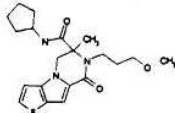
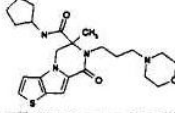
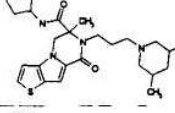
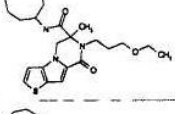
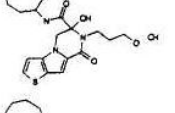
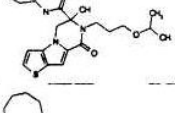
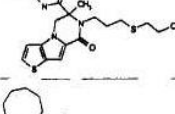
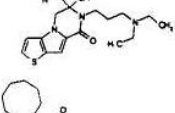
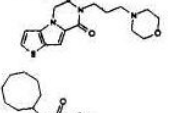
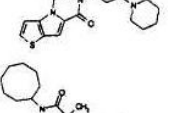
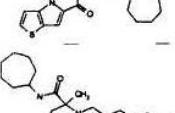
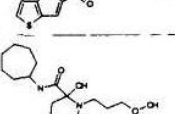
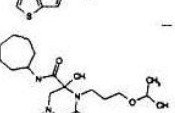
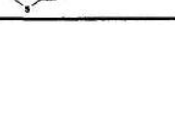
| | | | | |
|----|---|----------|-----|--|
| 12 |  | 470,6824 | 471 | |
| 13 |  | 484,7095 | 485 | |
| 14 |  | 484,7095 | 485 | |
| 15 |  | 431,6018 | 432 | |
| 16 |  | 417,5747 | 418 | |
| 17 |  | 461,6935 | 462 | |
| 18 |  | 458,6712 | 459 | |
| 19 |  | 472,6547 | 473 | |
| 20 |  | 470,6824 | 471 | |
| 21 |  | 498,7365 | 499 | |
| 22 |  | 484,7095 | 485 | |
| 23 |  | 484,7095 | 485 | |
| 24 |  | 456,6553 | 457 | |
| 25 |  | 498,7365 | 499 | |

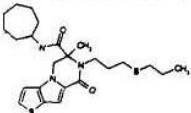
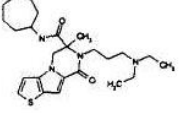
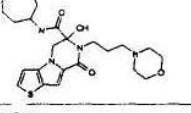
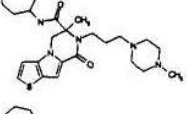
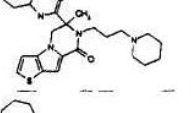
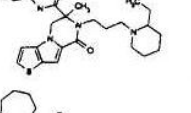
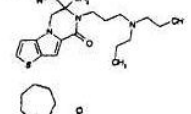
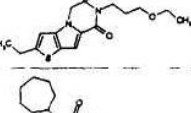
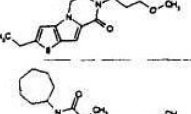
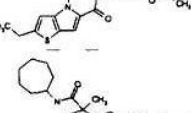
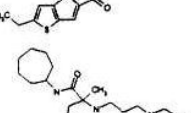
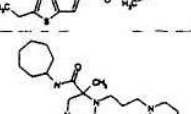
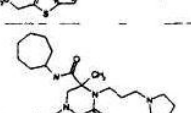
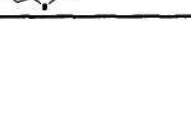
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| | | | | |
|----|---|----------|-----|--|
| 26 |  | 445,6289 | 446 | |
| 27 |  | 431,6018 | 432 | |
| 28 |  | 459,6559 | 460 | |
| 29 |  | 475,7205 | 476 | |
| 30 |  | 486,6818 | 487 | |
| 31 |  | 431,6018 | 432 | |
| 32 |  | 417,5747 | 418 | |
| 33 |  | 445,6289 | 446 | |
| 34 |  | 461,6935 | 462 | |
| 35 |  | 472,6547 | 473 | |
| 36 |  | 470,6824 | 471 | |
| 37 |  | 498,7365 | 499 | |
| 38 |  | 498,7365 | 499 | |
| 39 |  | 403,5476 | 404 | |

| | | | | |
|----|---|----------|-----|--|
| 40 |  | 389,5205 | 390 | |
| 41 |  | 444,6005 | 445 | |
| 42 |  | 470,6824 | 471 | |
| 43 |  | 445,6289 | 446 | |
| 44 |  | 431,6018 | 432 | |
| 45 |  | 459,6559 | 460 | |
| 46 |  | 475,7205 | 476 | |
| 47 |  | 472,6983 | 473 | |
| 48 |  | 486,6818 | 487 | |
| 49 |  | 484,7095 | 485 | |
| 50 |  | 498,7365 | 499 | |
| 51 |  | 431,6018 | 432 | |
| 52 |  | 417,5747 | 418 | |
| 53 |  | 445,6289 | 446 | |

| | | | | |
|----|---|----------|-----|--|
| 54 |  | 461,6935 | 462 | |
| 55 |  | 458,6712 | 459 | |
| 56 |  | 472,6547 | 473 | |
| 57 |  | 485,697 | 486 | |
| 58 |  | 470,6824 | 471 | |
| 59 |  | 498,7365 | 499 | |
| 60 |  | 486,7254 | 487 | |
| 61 |  | 459,6559 | 460 | |
| 62 |  | 445,6289 | 446 | |
| 63 |  | 473,683 | 474 | |
| 64 |  | 489,7476 | 490 | |
| 65 |  | 486,7254 | 487 | |
| 66 |  | 498,7365 | 499 | |
| 67 |  | 484,7095 | 485 | |

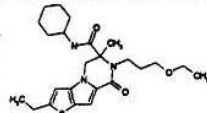
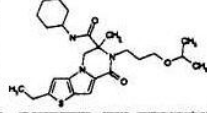
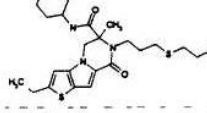
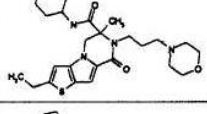
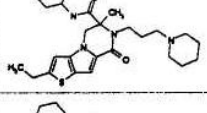
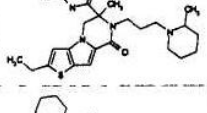
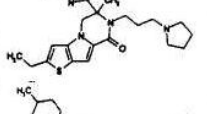
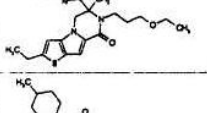
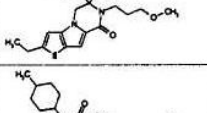
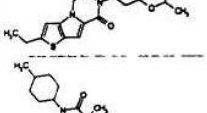
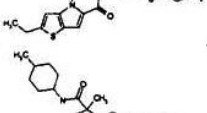
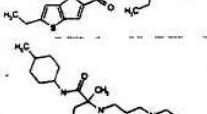
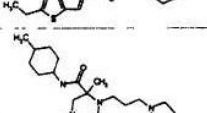
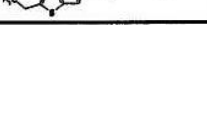
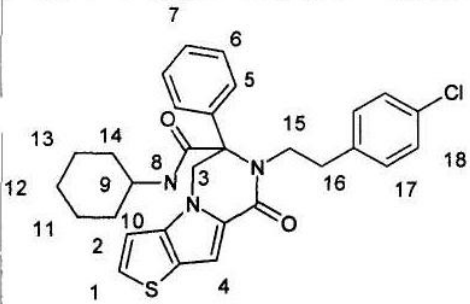
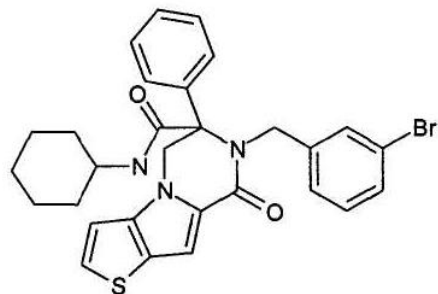
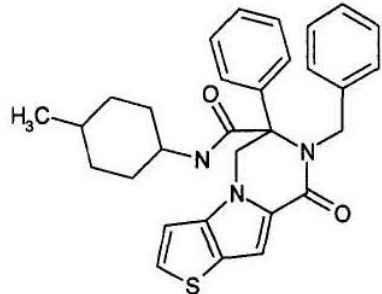
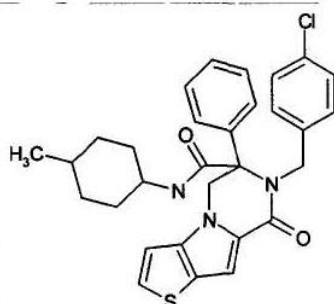
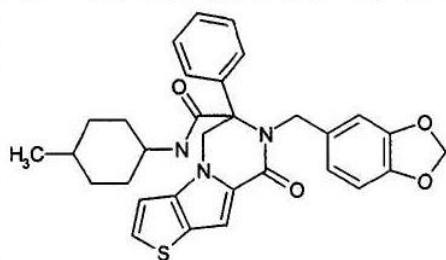
| | | | | |
|----|---|----------|-----|--|
| 68 |  | 445,6289 | 446 | |
| 69 |  | 459,6559 | 460 | |
| 70 |  | 475,7205 | 476 | |
| 71 |  | 486,6818 | 487 | |
| 72 |  | 484,7095 | 485 | |
| 73 |  | 498,7365 | 499 | |
| 74 |  | 470,6824 | 471 | |
| 75 |  | 459,6559 | 460 | |
| 76 |  | 445,6289 | 446 | |
| 77 |  | 473,683 | 474 | |
| 78 |  | 489,7476 | 490 | |
| 79 |  | 486,7254 | 487 | |
| 80 |  | 498,7365 | 499 | |
| 81 |  | 484,7095 | 485 | |

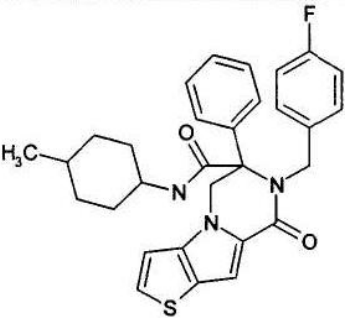
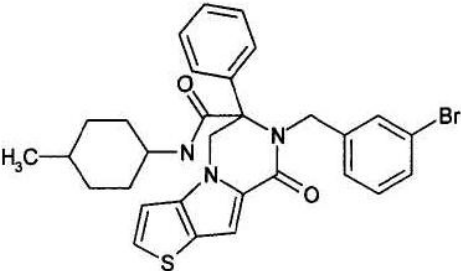
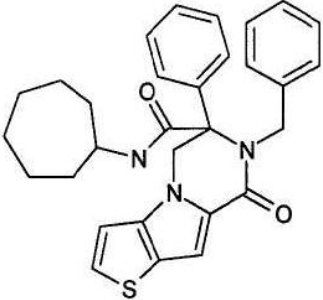
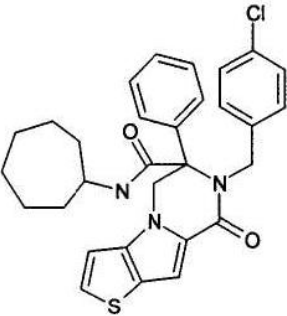
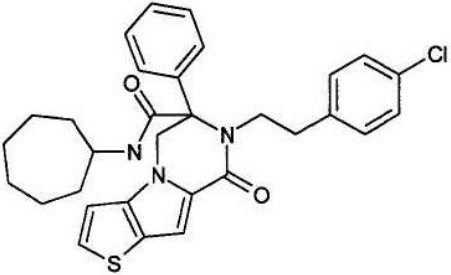
Таблица 1.16(6)

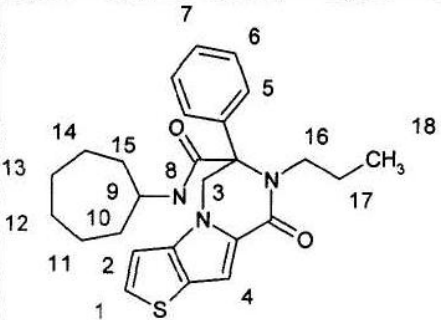
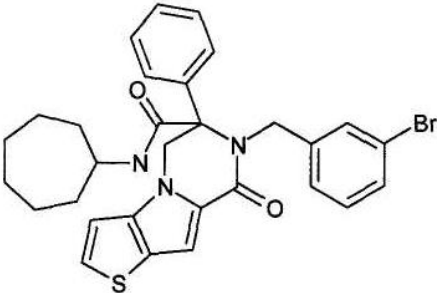
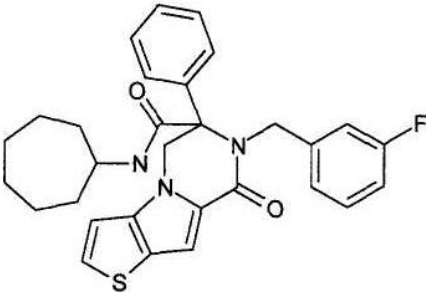
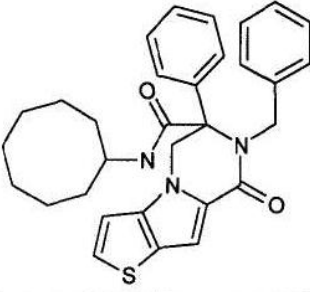
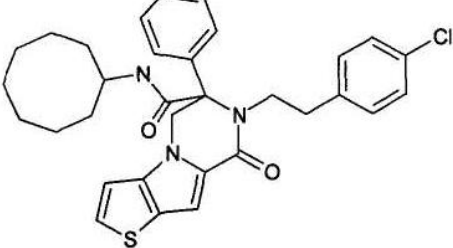
| № п.п. | Формула | Мол.масса | Мас-спектр, m/z (M+1) | ПМР спектр |
|--------|---|-----------|-----------------------|--|
| 1 |  | 532,1095 | 533 | 0.86 - 1.79 (10, 11, 12, 13, 14; 10H; m.), 2.36 + 3.73 (15; 2H, AB; 13.3 Hz), 2.83 (16; 2H, m), 3.58 (9; 1H; m.), 4.84 + 5.24 (3; 2H; AB; 12.9 Hz), 6.54 (17; 2H; d.; 7.7 Hz), 6.95 (2, 4; 2H; m.), 7.09 (18; 2H; d.; 7.7 Hz), 7.25 (1; 1H; d.; 5.3 Hz), ... |
| 2 |  | 562,5334 | 563 | |
| 3 |  | 497,6645 | 498 | |
| 4 |  | 532,1095 | 533 | |
| 5 |  | 541,6744 | 542 | |

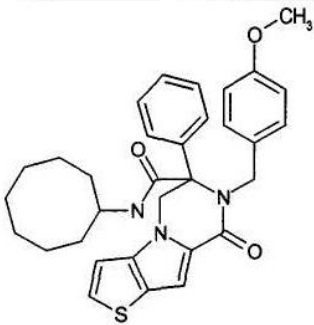
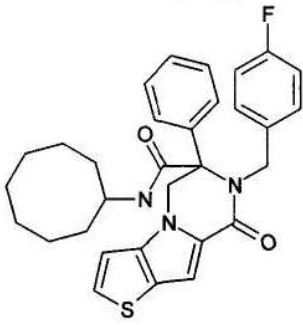
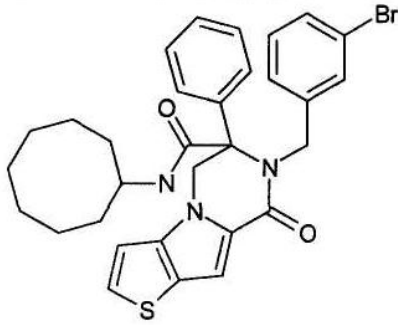
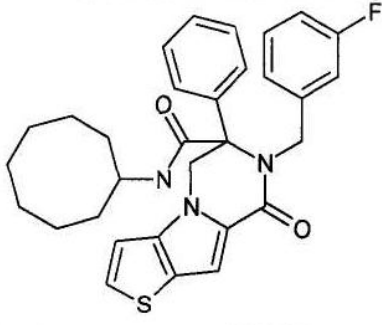

815

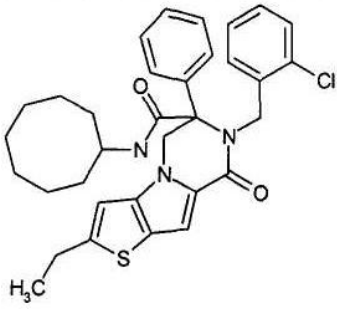
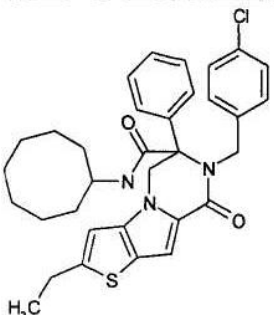
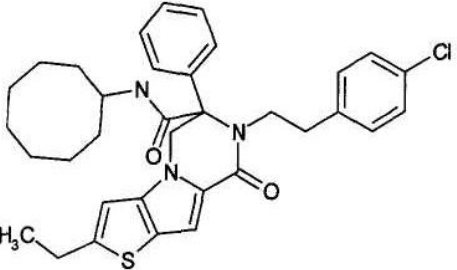
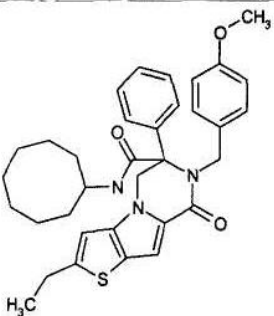
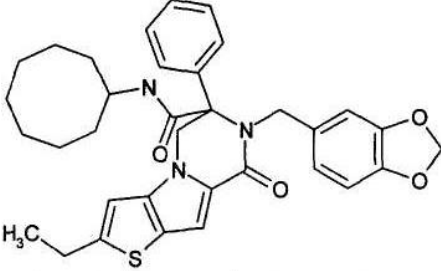
84447

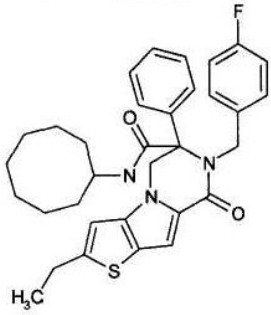
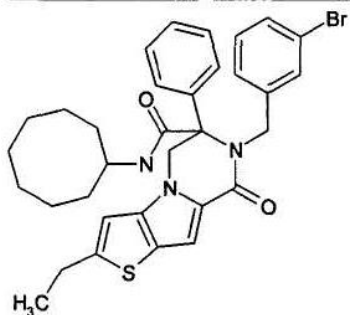
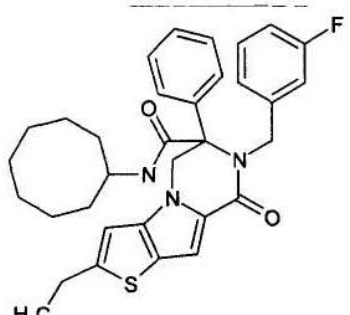
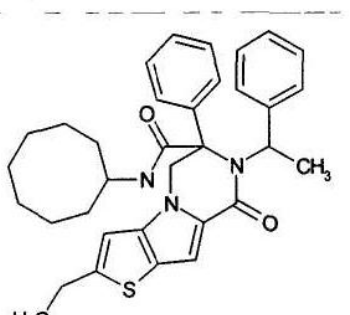
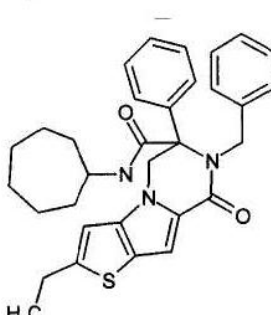
816

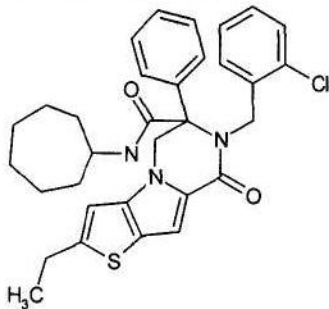
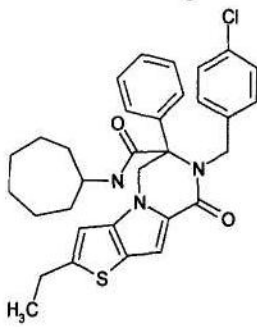
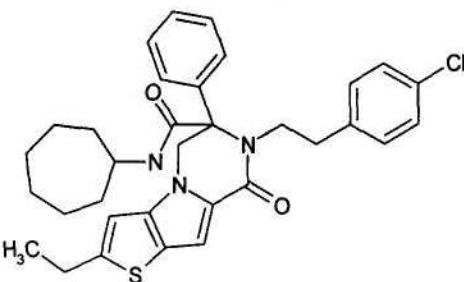
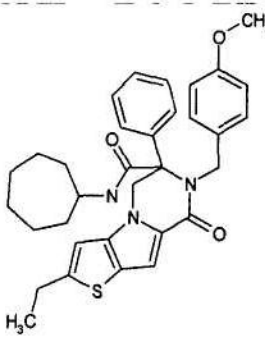
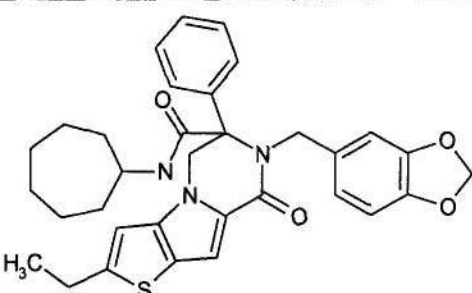
| | | | | |
|----|---|----------|-----|--|
| 6 |  | 515,6549 | 516 | |
| 7 |  | 576,5605 | 577 | |
| 8 |  | 497,6645 | 498 | |
| 9 |  | 532,1095 | 533 | |
| 10 |  | 546,1366 | 547 | |

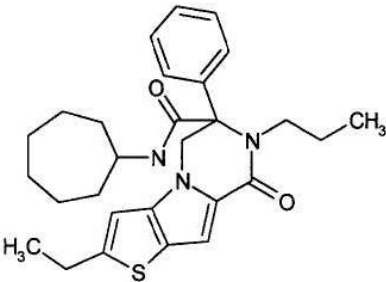
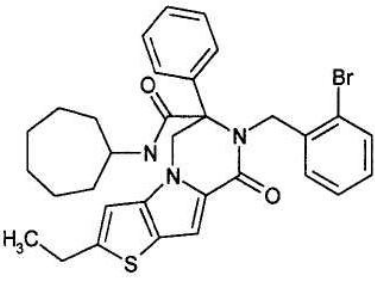
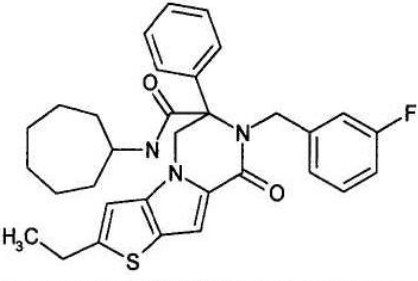

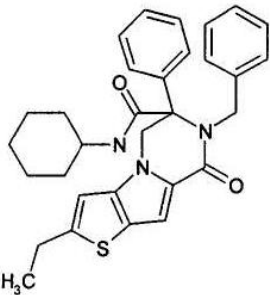
| | | | | |
|----|---|----------|-----|---|
| 11 |  | 449,6199 | 450 | 0 63 (18, 3H, t, 7 1Hz), 1 05 - 1 72 (10, 11, 12, 13, 14, 15, 12H, m), 2 73 + 3 47 (16, 2H, m), 3 78 (9, 1H, m), 4 73 + 5 14 (3, 2H, AB, 12 6 Hz), 6 90 (4, 1H, s), 6 94 (2, 1H, d, 4 5 Hz), 7 14 (8, 1H, d, 7 8 Hz), 7 22 (1, 1H, d, 4 5 Hz), 7 34 |
| 12 |  | 576,5605 | 577 | |
| 13 |  | 515,6549 | 516 | |
| 14 |  | 511,6916 | 512 | |
| 15 |  | 560,1637 | 561 | |

| | | | |
|----|---|----------|-----|
| 16 |  | 541,7181 | 542 |
| 17 |  | 529,682 | 530 |
| 18 |  | 590,5876 | 591 |
| 19 |  | 529,682 | 530 |
| 20 |  | 539,7457 | 540 |

| | | | | |
|----|---|----------|-----|--|
| 21 |  | 574,1908 | 575 | |
| 22 |  | 574,1908 | 575 | |
| 23 |  | 588,2179 | 589 | |
| 24 |  | 569,7722 | 570 | |
| 25 |  | 583,7557 | 584 | |

| | | | | |
|----|---|----------|-----|--|
| 26 |  | 557,7362 | 558 | |
| 27 |  | 618,6418 | 619 | |
| 28 |  | 557,7362 | 558 | |
| 29 |  | 553,7728 | 554 | |
| 30 |  | 525,7187 | 526 | |

| | | | | |
|----|---|----------|-----|--|
| 31 |  | 560,1637 | 561 | |
| 32 |  | 560,1637 | 561 | |
| 33 |  | 574,1908 | 575 | |
| 34 |  | 555,7451 | 556 | |
| 35 |  | 569,7286 | 570 | |

| | | | | |
|----|---|----------|-----|--|
| 36 |  | 477,6741 | 478 | |
| 37 |  | 604,6147 | 605 | |
| 38 |  | 543,7091 | 544 | |
| 39 |  | 539,7457 | 540 | |
| 40 |  | 511,6916 | 512 | |

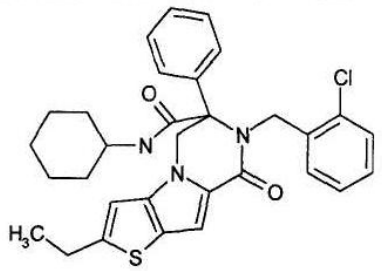
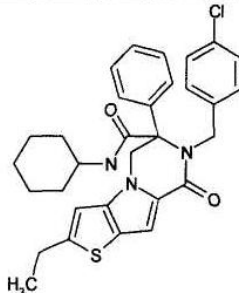
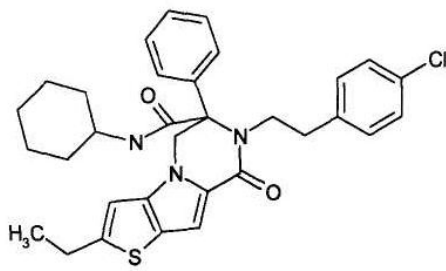
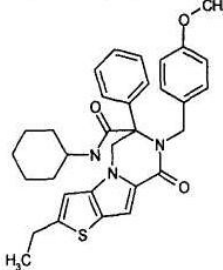
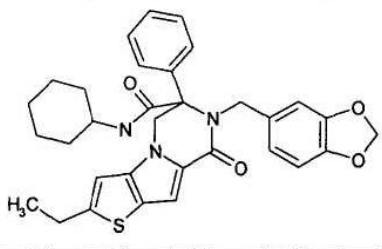
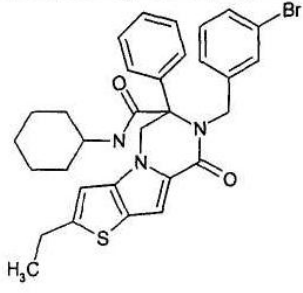
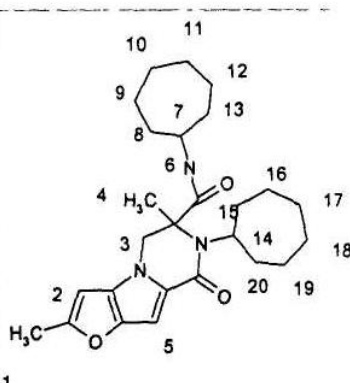
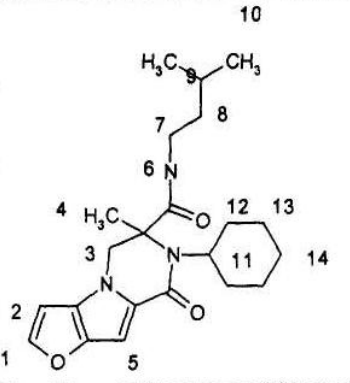
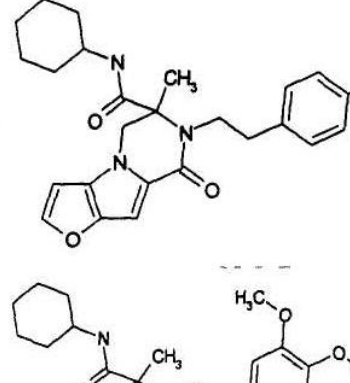
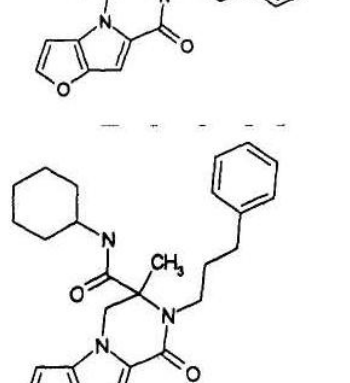
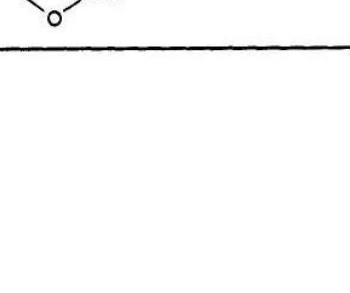
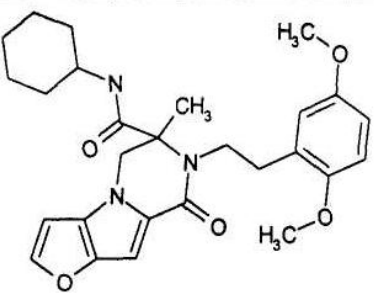
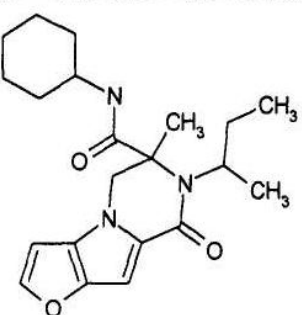
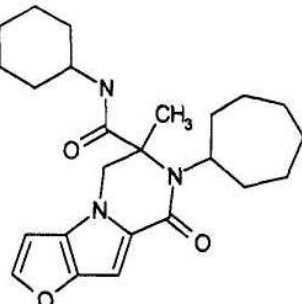
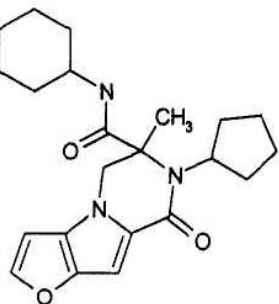
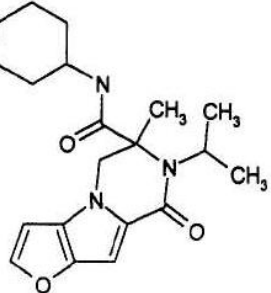
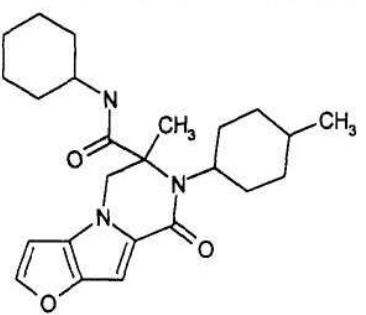
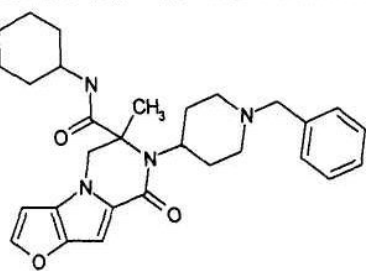
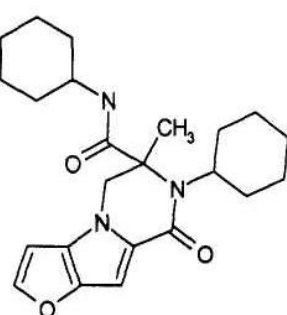
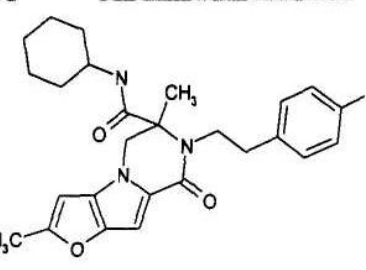
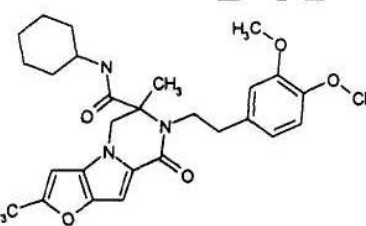
| | | | | |
|----|---|----------|-----|--|
| 41 |  | 546,1366 | 545 | |
| 42 |  | 546,1366 | 545 | |
| 43 |  | 560,1637 | 561 | |
| 44 |  | 541,7181 | 542 | |
| 45 |  | 555,7015 | 556 | |
| 46 |  | 590,5876 | 591 | |

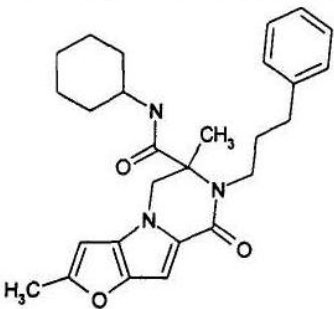
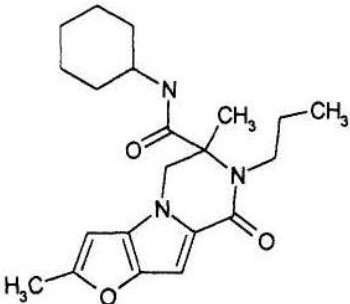
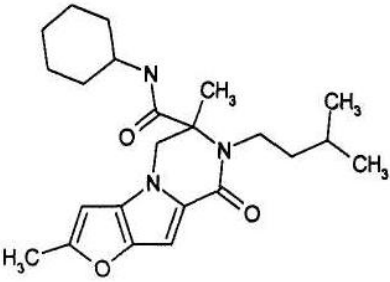
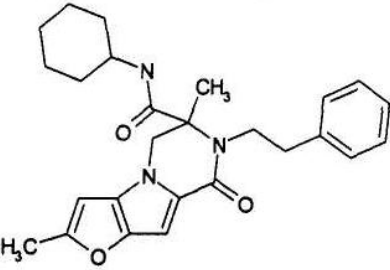
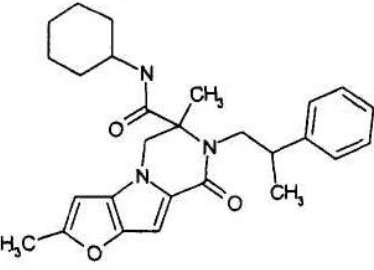
Таблица 1.17(1)

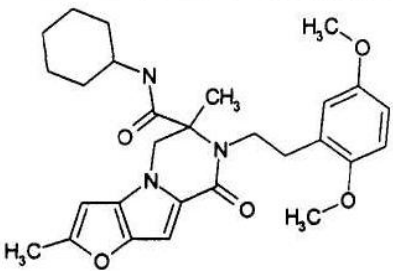
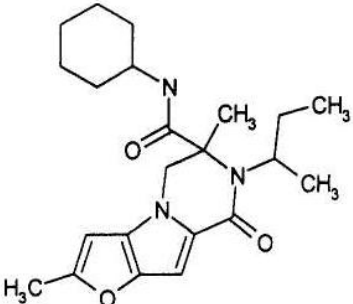
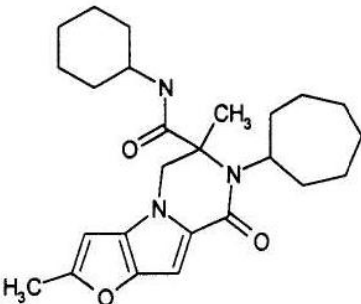
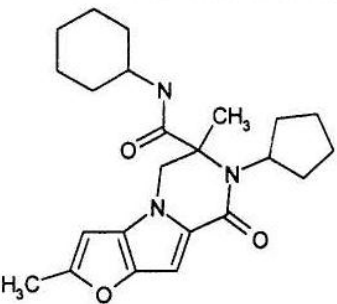
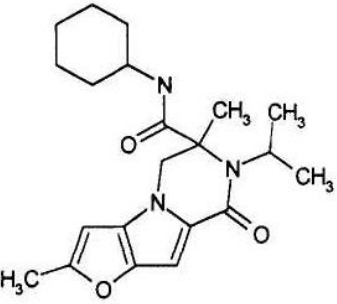
| № п.п. | Формула | Мол.масса | m/z (M+1) | ПМР спектр |
|--------|---|-----------|-----------|---|
| 1 |  | 439,6031 | 440 | 1.02- 1.99 (8, 9, 10, 11, 12, 13, 15, 16, 17, 18, 19, 20; 24H; m.), 1.40 (4; 3H, s.), 2.41 (1; 3H, s.), 2.79 (14; 1H; b.m.), 3.79 (7; 1H; b.m), 3.81 + 4.41 (3; 2H, AB; 12.4 Hz), 6.11 (2; 1H, s.), 6.45 (5; 1H; s.), 7.88 (6; 1H; d.; 7.2 Hz) |
| 2 |  | 385,5107 | 386 | 0.89 (10; 6H; m.), 1.05 - 1.45 (8, 9, 14; 5H; m.), 1.45 (4; 3H, s.), 1.50 - 1.91, 2.50 - 2.89, 3.05 - 3.28 (7, 11, 12, 13; 11H; m.m.), 3.95 + 4.41 (3; 2H; AB; 12.4 Hz), 6.45 (2; 1H; d., 1.4 Hz), 6.52 (5; 1H; s.), 7.42 (1; 1H; d., 1.4 Hz), 8.15 (6; 1H... |
| 3 |  | 453,9732 | 454 | |
| 4 |  | 479,5812 | 480 | |
| 5 |  | 433,5553 | 434 | |

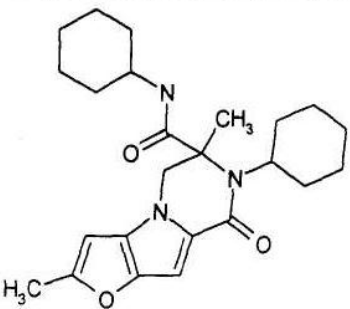
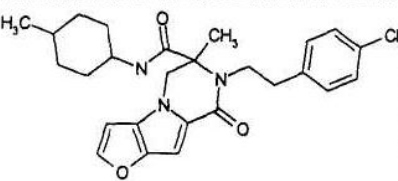
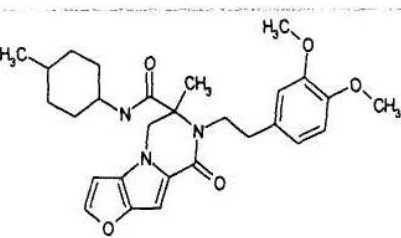
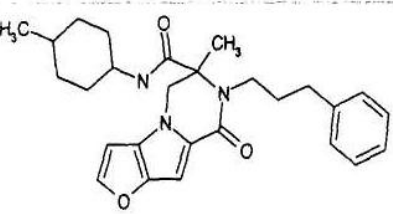

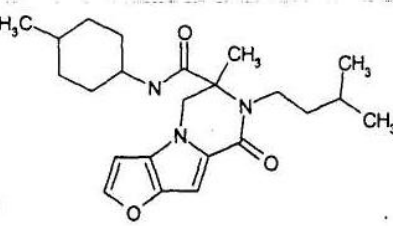
| | | | | |
|----|--|----------|-----|---|
| 6 | | 357,4565 | 358 | |
| 7 | | 385,5107 | 386 | |
| 8 | | 419,5282 | 420 | 1.03 - 1.72 (8, 9, 10, 11, 12; 10H; m.), 1.44 (4; 3H, s.), 2.87 (14; 2H, m.), 3.27 + 3.73 (13; 2H; AB; m.m.), 3.45 (7; 1H; b.m.), 3.92 + 4.61 (3; 2H; AB; 12.6 Hz), 6.51 (2; 1H; d.; 2.1 Hz), 6.58 (5; 1H; s.), 7.08 - 7.33 (6, 15, 16, 17; 6H, m.), 7.48 ... |
| 9 | | 433,5553 | 434 | |
| 10 | | 479,5812 | 480 | |

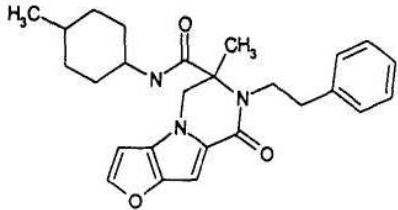
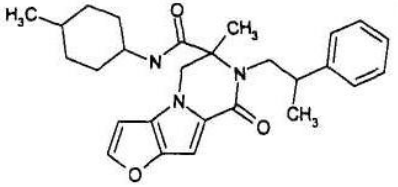
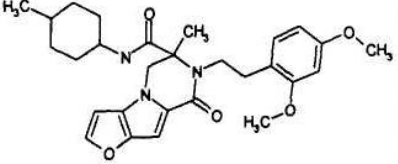
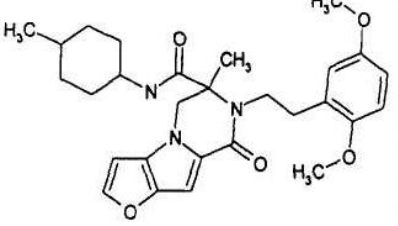
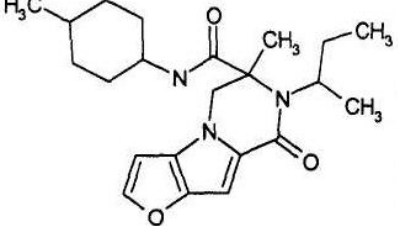

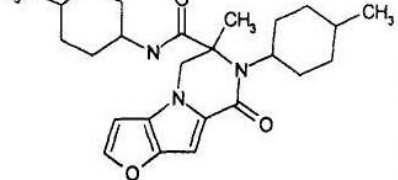
| | | | | |
|----|---|----------|-----|--|
| 11 |  | 479,5812 | 480 | |
| 12 |  | 371,4836 | 372 | |
| 13 |  | 411,5489 | 412 | |
| 14 |  | 383,4947 | 384 | |
| 15 |  | 357,4565 | 358 | |


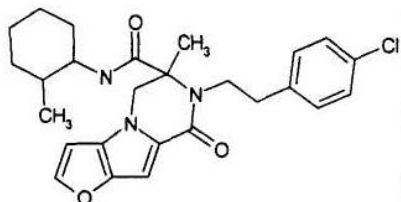
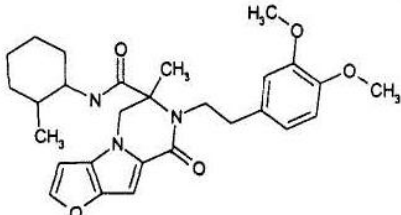
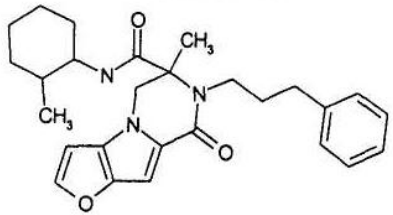
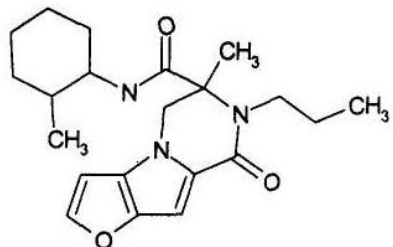
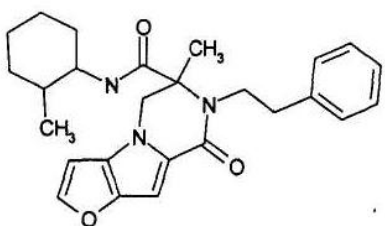
| | | | | |
|----|---|----------|-----|--|
| 16 |  | 411,5489 | 412 | |
| 17 |  | 488,6353 | 489 | |
| 18 |  | 397,5218 | 398 | |
| 19 |  | 468,0003 | 469 | |
| 20 |  | 493,6083 | 494 | |

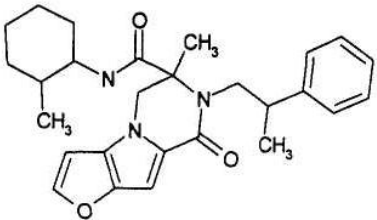

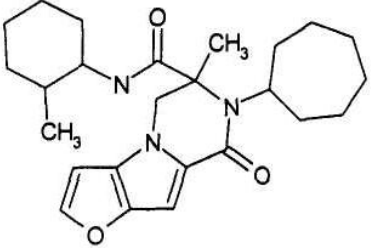
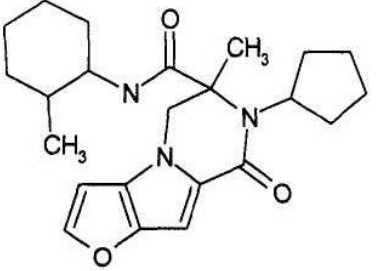
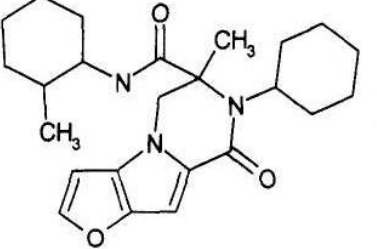
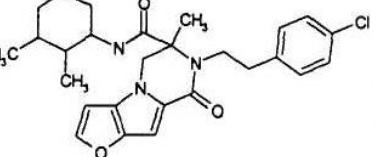
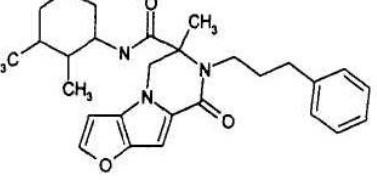
| | | | |
|----|---|----------|-----|
| 21 |  | 447,5824 | 448 |
| 22 |  | 371,4836 | 372 |
| 23 |  | 399,5378 | 400 |
| 24 |  | 433,5553 | 434 |
| 25 |  | 447,5824 | 448 |

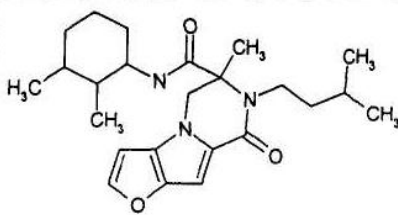
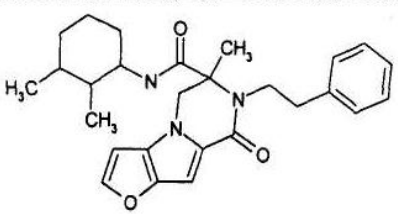
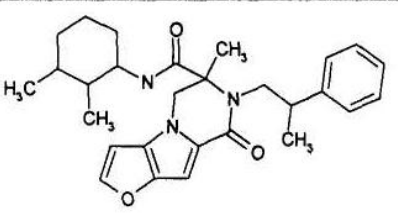
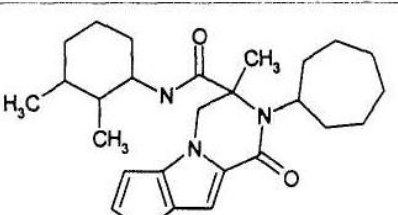
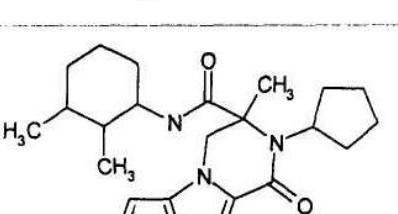
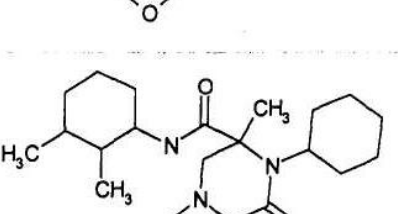
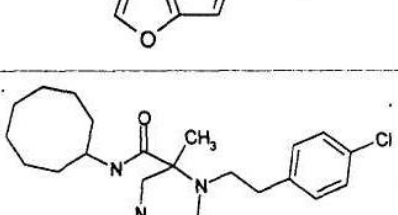
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|----|---|----------|-----|--|
| 26 |  | 493,6083 | 494 | |
| 27 |  | 385,5107 | 386 | |
| 28 |  | 425,576 | 426 | |
| 29 |  | 397,5218 | 398 | |
| 30 |  | 371,4836 | 372 | |

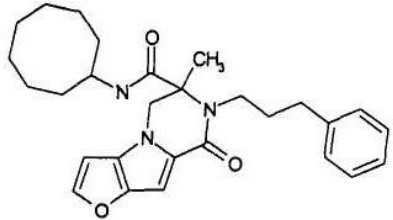
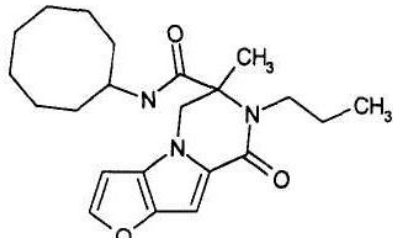
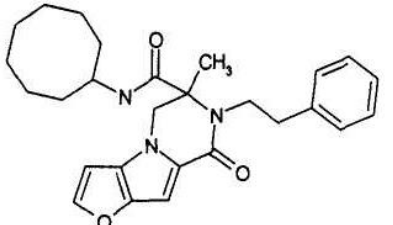
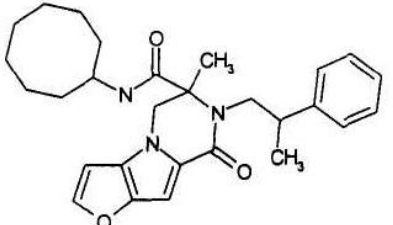
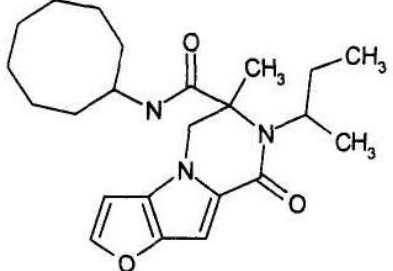
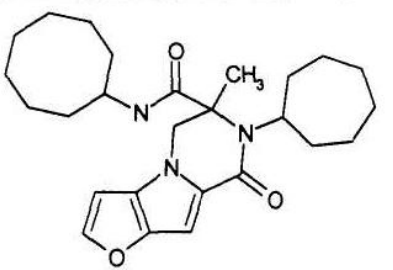
| | | | |
|----|---|----------|-----|
| 31 |  | 411,5489 | 412 |
| 32 |  | 468,0003 | 469 |
| 33 |  | 493,6083 | 494 |
| 34 |  | 447,5824 | 448 |
| 35 |  | 371,4836 | 372 |
| 36 |  | 399,5378 | 400 |


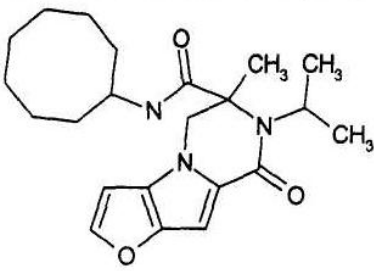
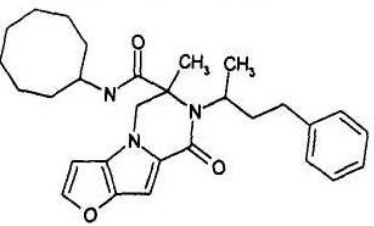
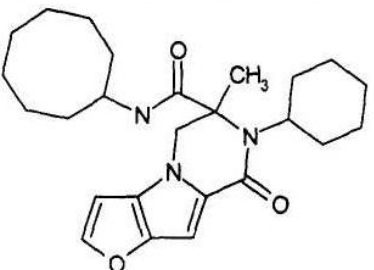
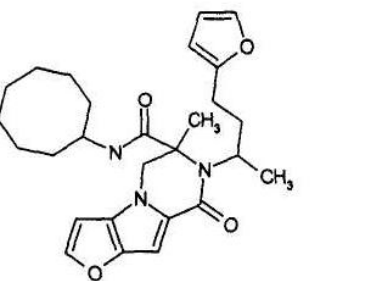
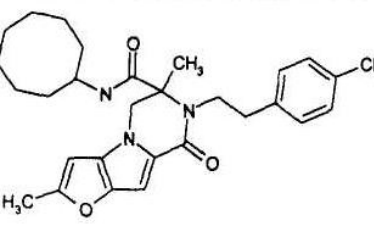
| | | | |
|----|---|----------|-----|
| 37 |  | 433,5553 | 434 |
| 38 |  | 447,5824 | 448 |
| 39 |  | 493,6083 | 494 |
| 40 |  | 493,6083 | 494 |
| 41 |  | 385,5107 | 386 |
| 42 |  | 425,576 | 426 |
| 43 |  | 425,576 | 426 |

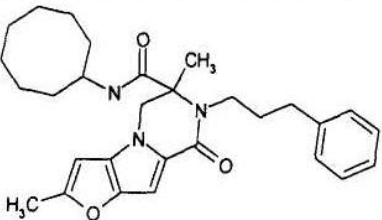
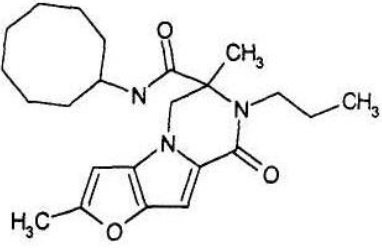
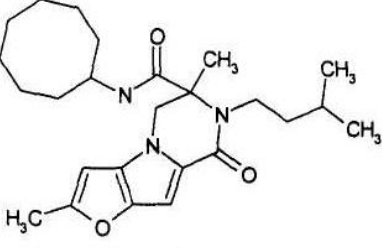
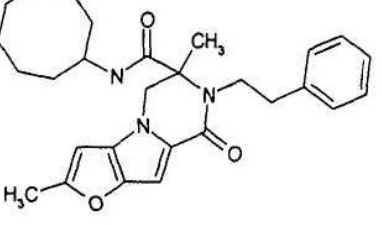
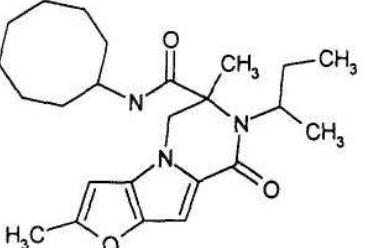
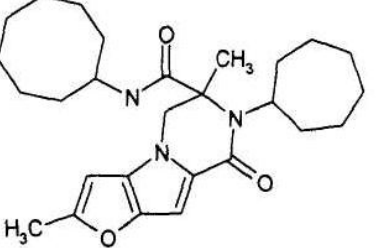
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|----|---|----------|-----|
| 44 |  | 411,5489 | 412 |
| 45 |  | 468,0003 | 469 |
| 46 |  | 493,6083 | 494 |
| 47 |  | 447,5824 | 448 |
| 48 |  | 371,4836 | 372 |
| 49 |  | 433,5553 | 434 |

| | | | |
|----|---|----------|-----|
| 50 |  | 447,5824 | 448 |
| 51 |  | 493,6083 | 494 |
| 52 |  | 425,576 | 426 |
| 53 |  | 397,5218 | 398 |
| 54 |  | 411,5489 | 412 |
| 55 |  | 482,0274 | 483 |
| 56 |  | 461,6095 | 462 |

| | | | | |
|----|---|----------|-----|--|
| 57 |  | 413,5649 | 414 | |
| 58 |  | 447,5824 | 448 | |
| 59 |  | 461,6095 | 462 | |
| 60 |  | 439,6031 | 440 | |
| 61 |  | 411,5489 | 412 | |
| 62 |  | 425,576 | 426 | |
| 63 |  | 482,0274 | 483 | |

| | | | |
|----|---|----------|-----|
| 64 |  | 461,6095 | 462 |
| 65 |  | 385,5107 | 386 |
| 66 |  | 447,5824 | 448 |
| 67 |  | 461,6095 | 462 |
| 68 |  | 399,5378 | 400 |
| 69 |  | 439,6031 | 440 |

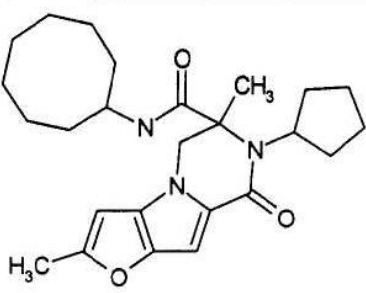
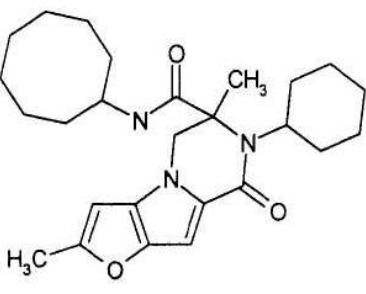
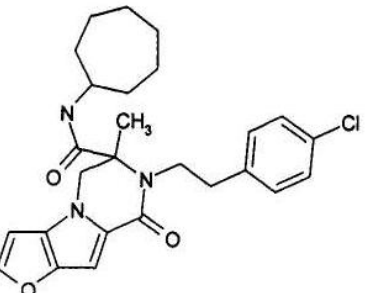
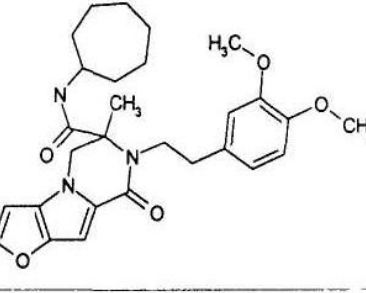
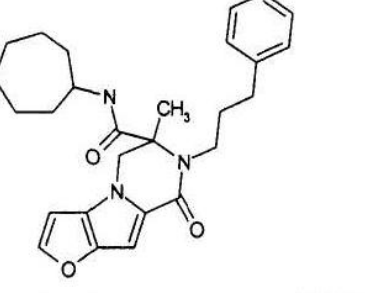
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|----|---|----------|-----|--|
| 70 |  | 411,5489 | 412 | |
| 71 |  | 385,5107 | 386 | |
| 72 |  | 475,6365 | 476 | |
| 73 |  | 425,576 | 426 | |
| 74 |  | 465,5977 | 466 | |
| 75 |  | 496,0545 | 497 | |

| | | | |
|----|---|----------|-----|
| 76 |  | 475,6365 | 476 |
| 77 |  | 399,5378 | 400 |
| 78 |  | 427,5919 | 428 |
| 79 |  | 461,6095 | 462 |
| 80 |  | 413,5649 | 414 |
| 81 |  | 453,6302 | 454 |

859

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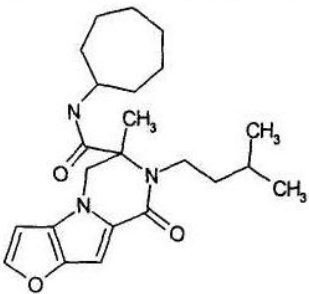
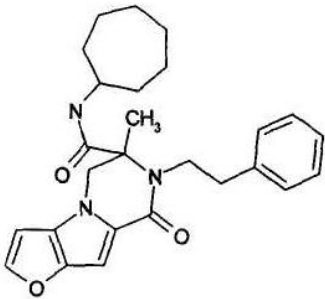
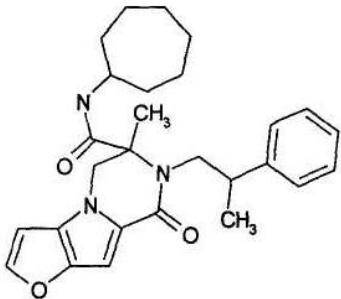
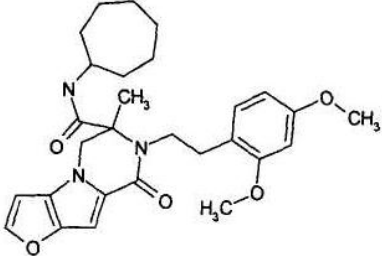
860



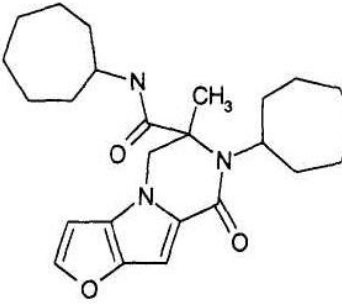
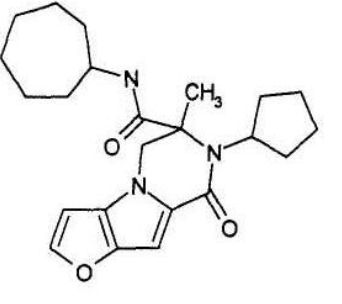
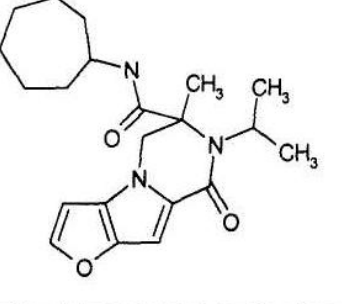
| | | | |
|----|---|----------|-----|
| 82 |  | 425,576 | 426 |
| 83 |  | 439,6031 | 440 |
| 84 |  | 468,0003 | 469 |
| 85 |  | 493,6083 | 494 |
| 86 |  | 447,5824 | 448 |

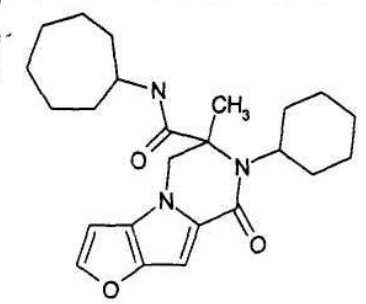
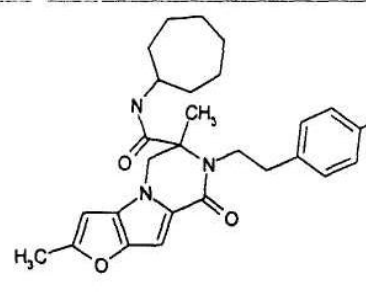
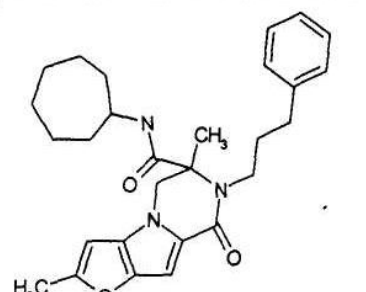
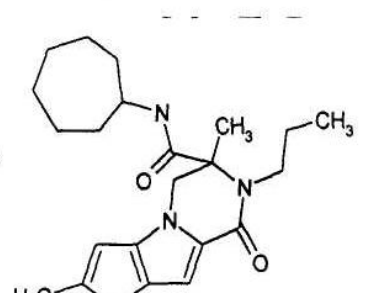
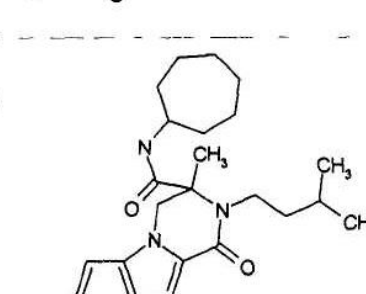
861

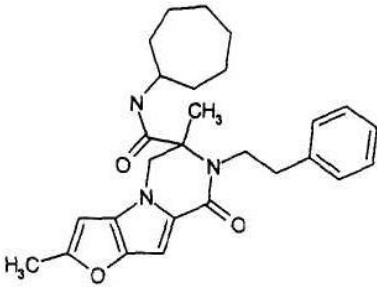
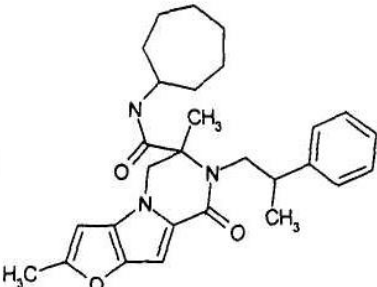
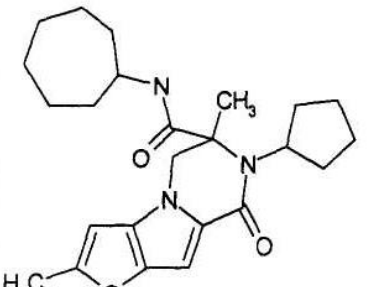
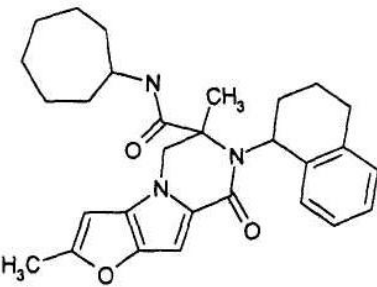
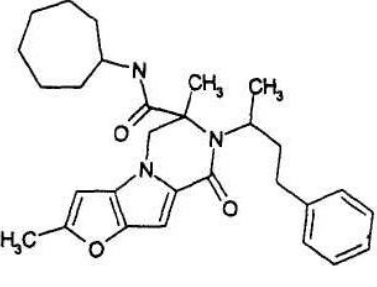
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862

| | | | | |
|----|---|----------|-----|--|
| 87 |  | 371,4836 | 372 | |
| 88 |  | 399,5378 | 400 | |
| 89 |  | 433,5553 | 434 | |
| 90 |  | 447,5824 | 448 | |
| 91 |  | 493,6083 | 494 | |

| | | | |
|----|---|----------|-----|
| 92 |  | 493,6083 | 494 |
| 93 |  | 385,5107 | 386 |
| 94 |  | 425,576 | 426 |
| 95 |  | 397,5218 | 398 |
| 96 |  | 371,4836 | 371 |

| | | | |
|-----|---|----------|-----|
| 97 |  | 411,5489 | 412 |
| 98 |  | 482,0274 | 483 |
| 99 |  | 461,6095 | 462 |
| 100 |  | 385,5107 | 386 |
| 101 |  | 413,5649 | 414 |

| | | | |
|-----|---|----------|-----|
| 102 |  | 447,5824 | 448 |
| 103 |  | 461,6095 | 462 |
| 104 |  | 411,5489 | 412 |
| 105 |  | 473,6206 | 474 |
| 106 |  | 475,6365 | 476 |

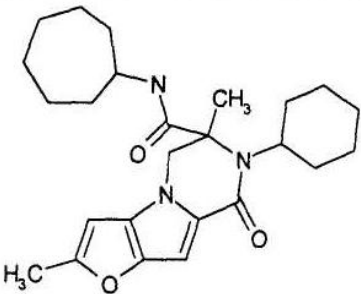
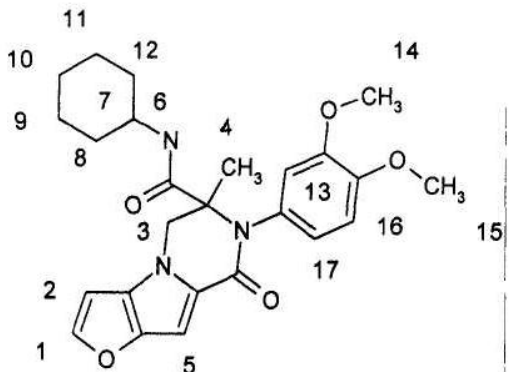
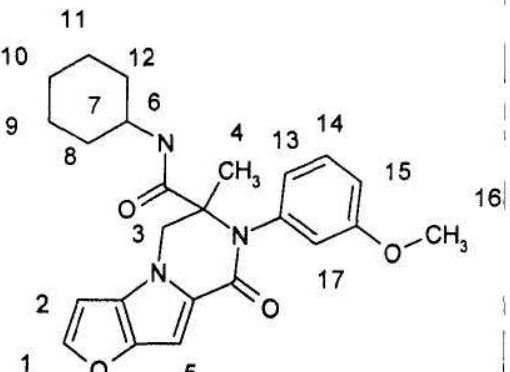
| | | | | |
|-----|---|---------|-----|--|
| 107 |  | 425,576 | 426 | |
|-----|---|---------|-----|--|

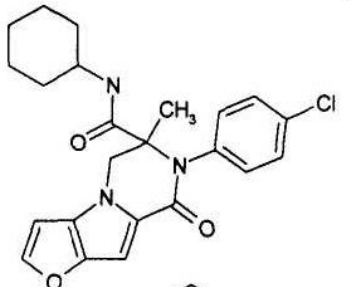
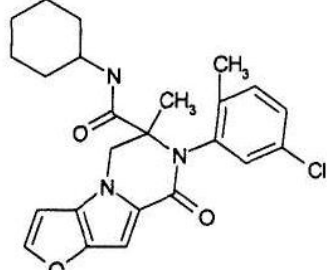
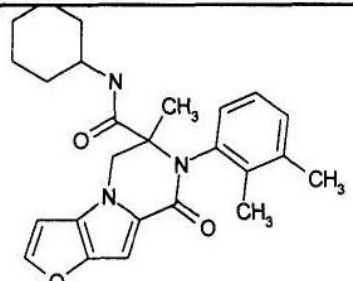
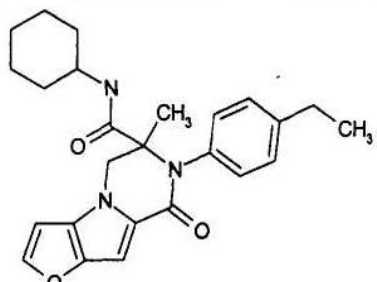
Таблица 1.17(2)

| № п.п. | Формула | Мол.маса | m/z (M+1) | ПМР спектр |
|--------|---|----------|--------------|--|
| 1 |  | 451,527 | 452 | 1.01 - 1.69 (8, 9, 10, 11, 12, 10H; m.), 1.29 (4; 3H, s.), 3.49 (7; 1H; b.m.), 3.76; 3.84 (14, 15; 6H, s., s.), 4.18 + 4.77 (3, 2H, AB; 13.6 Hz), 6.48 (2, 1H; d; 2.1 Hz), 6.54 (5; 1H; s.), 6.81 (16, 17; 2H, m.), 6.94 (13, 1H, s.), 7.29 (6, 1H; b.d., |
| 2 |  | 421,5005 | 422 | 1.00 - 1.74 (8, 9, 10, 11, 12, 10H; m.), 1.29 (4; 3H, s.), 3.49 (7; 1H; b.m.), 3.76 (16, 3H, s.), 4.21 + 4.77 (3; 2H; AB, 13.6 Hz), 6.52 (2; 1H, d, 2.0 Hz), 6.58 (5; 1H; s.), 6.81 - 6.96 (13, 15, 17; 3H, m.), 7.22 (14; 1H, t.; 3.1 Hz), 7.36 (6; 1H; ... |

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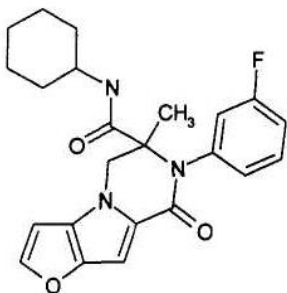
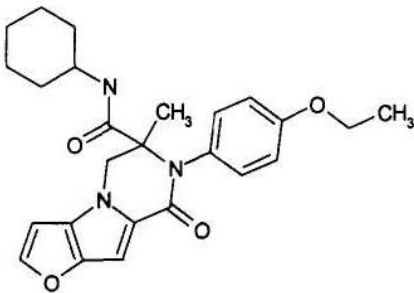
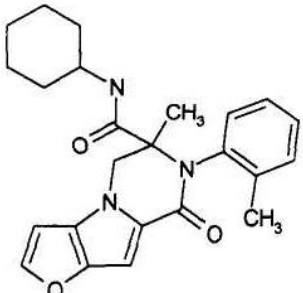
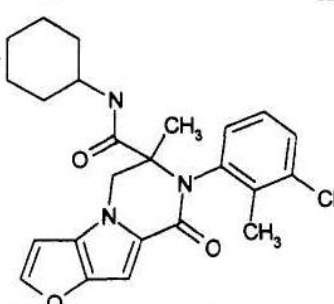
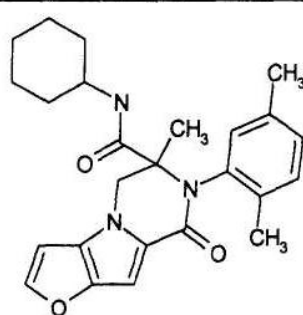
872

| | | | |
|---|---|----------|-----|
| 3 |  | 425,919 | 426 |
| 4 |  | 439,9461 | 440 |
| 5 |  | 419,5282 | 420 |
| 6 |  | 419,5282 | 420 |

873

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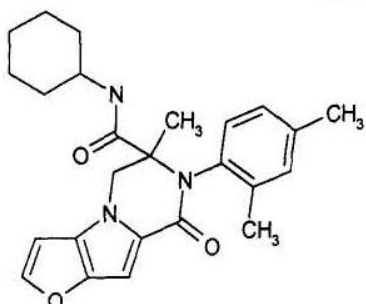
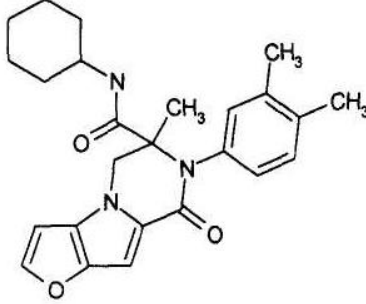
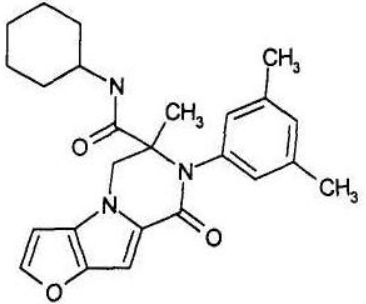
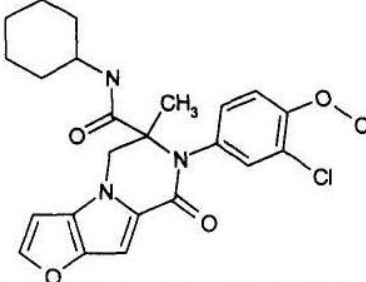
874

| | | | |
|----|---|----------|-----|
| 7 |  | 409,4644 | 410 |
| 8 |  | 435,5276 | 436 |
| 9 |  | 405,5011 | 406 |
| 10 |  | 439,9461 | 440 |
| 11 |  | 419,5282 | 420 |

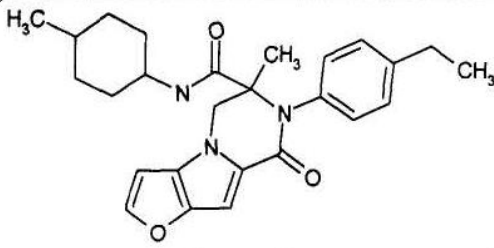
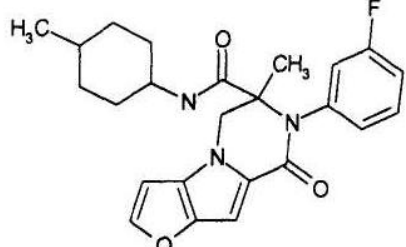
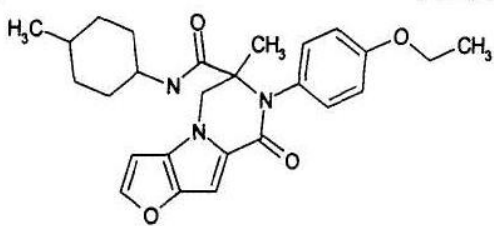
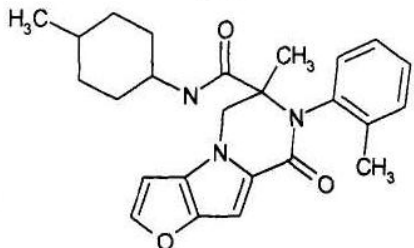

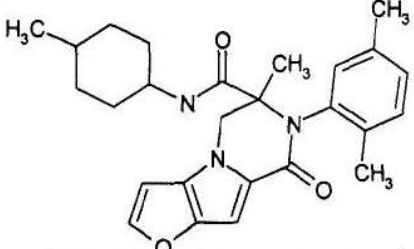
875


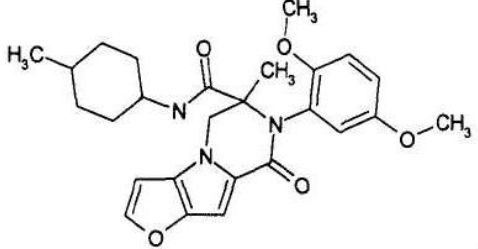
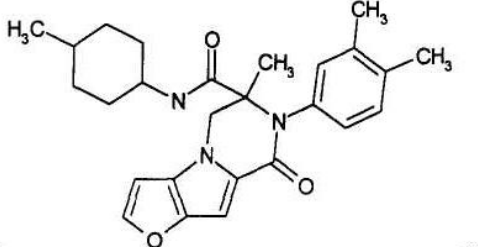
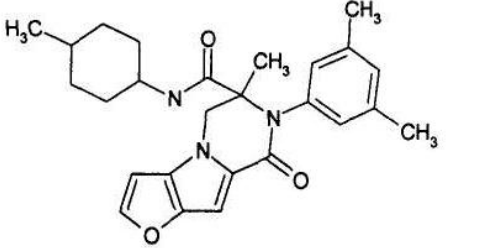

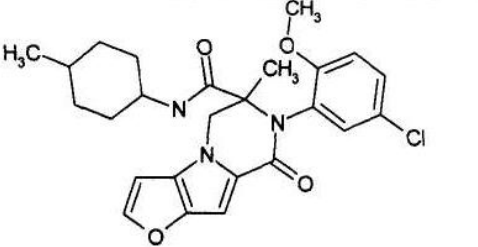

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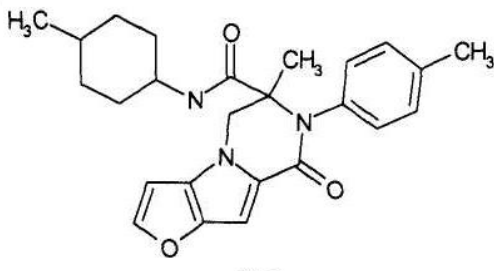
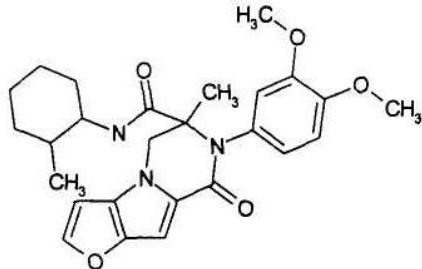
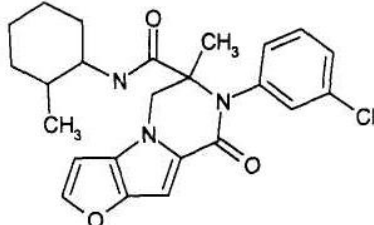
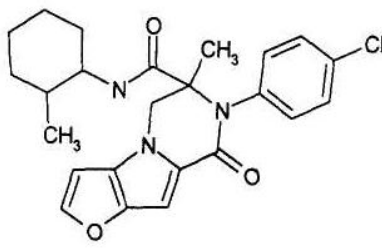
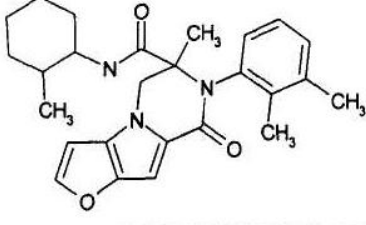
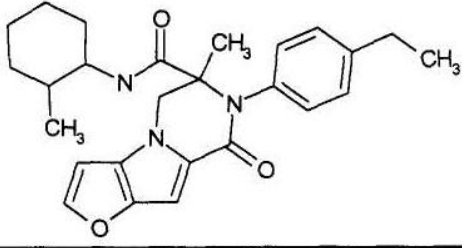
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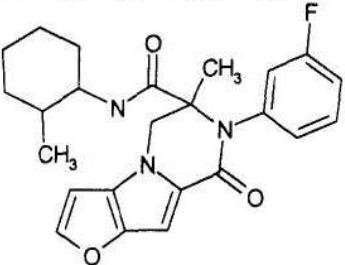
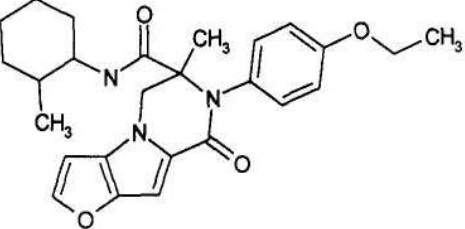

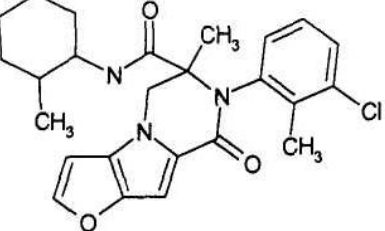

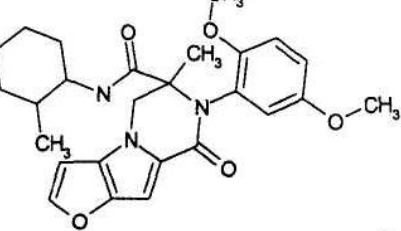
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|----|---|----------|-----|
| 12 |  | 419,5282 | 420 |
| 13 |  | 419,5282 | 420 |
| 14 |  | 419,5282 | 420 |
| 15 |  | 455,9455 | 456 |

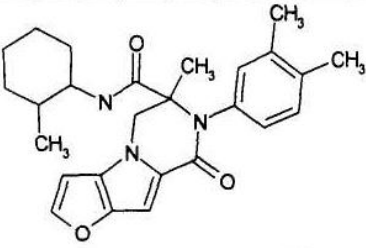
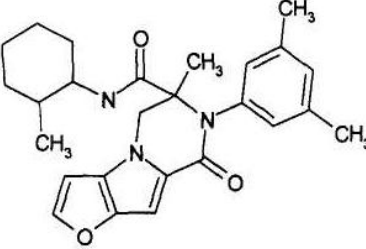
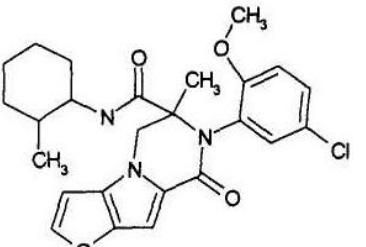
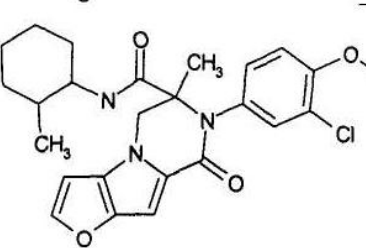
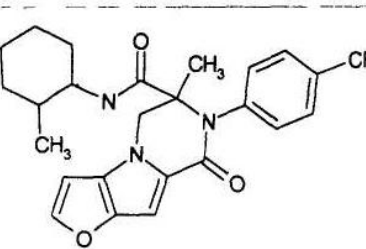
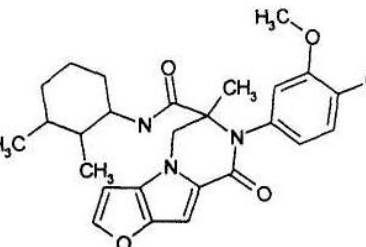
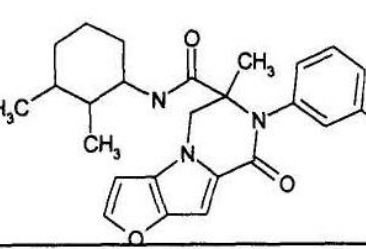
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|----|--|----------|-----|
| 16 | | 465,5541 | 466 |
| 17 | | 435,5276 | 436 |
| 18 | | 439,9461 | 440 |
| 19 | | 439,9461 | 440 |
| 20 | | 453,9732 | 454 |
| 21 | | 433,5553 | 434 |

| | | | |
|----|---|----------|-----|
| 22 |  | 433,5553 | 434 |
| 23 |  | 423,4915 | 424 |
| 24 |  | 449,5547 | 450 |
| 25 |  | 419,5282 | 420 |
| 26 |  | 453,9732 | 454 |
| 27 |  | 433,5553 | 434 |

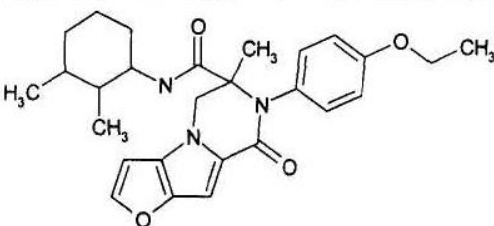



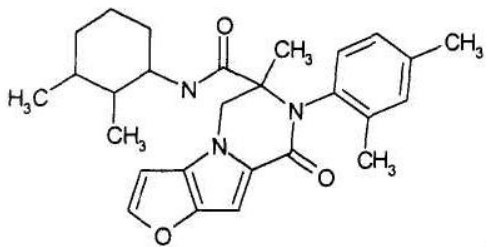
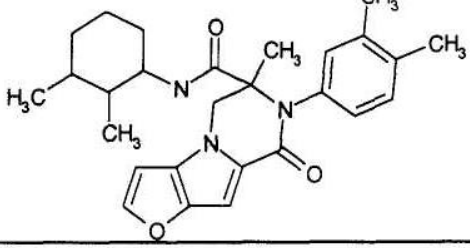
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|----|---|----------|-----|
| 28 |  | 433,5553 | 434 |
| 29 |  | 465,5541 | 466 |
| 30 |  | 433,5553 | 434 |
| 31 |  | 433,5553 | 434 |
| 32 |  | 447,5824 | 448 |
| 33 |  | 469,9726 | 470 |
| 34 |  | 469,9726 | 470 |

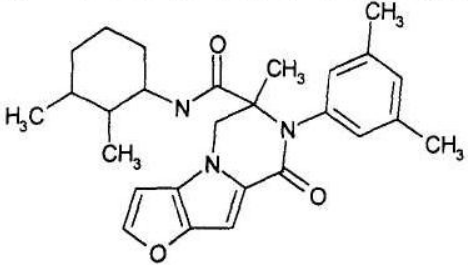
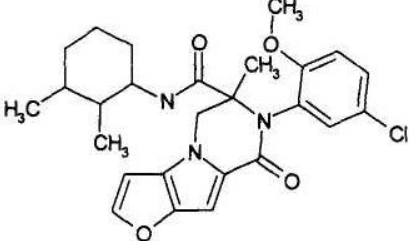
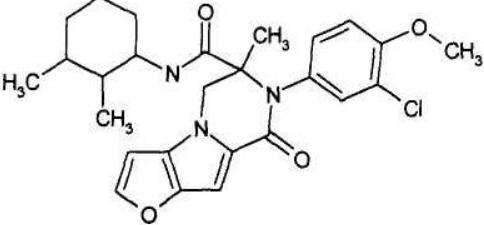
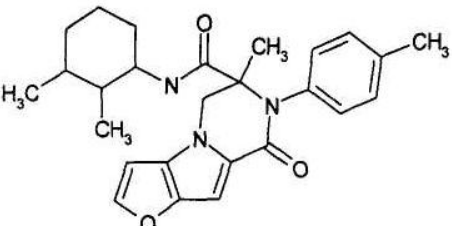

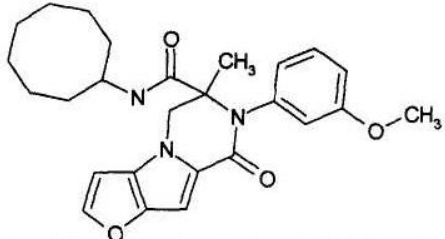
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|----|---|----------|-----|
| 35 |  | 419,5282 | 420 |
| 36 |  | 465,5541 | 466 |
| 37 |  | 439,9461 | 440 |
| 38 |  | 439,9461 | 440 |
| 39 |  | 433,5553 | 434 |
| 40 |  | 433,5553 | 434 |

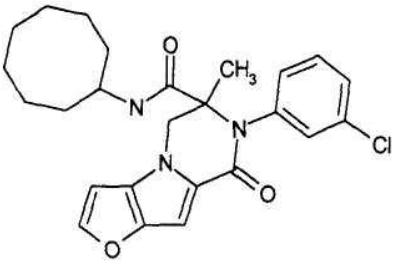
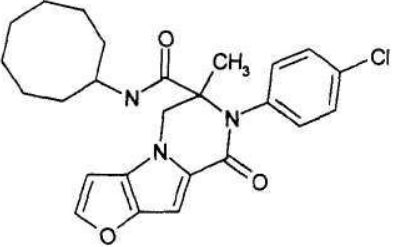
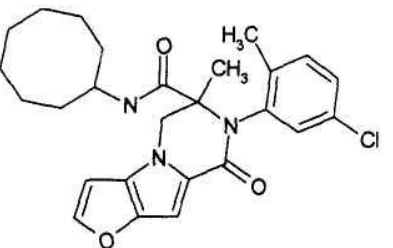
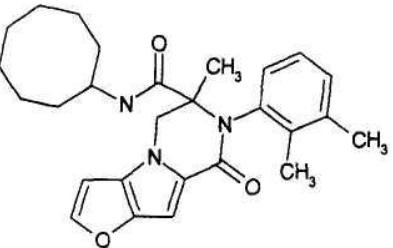
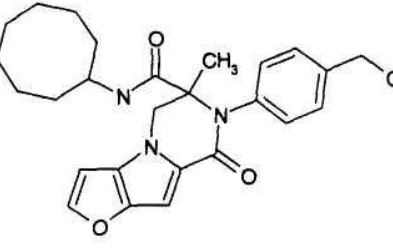
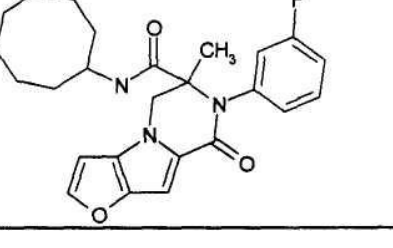
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|----|---|----------|-----|
| 41 |  | 423,4915 | 424 |
| 42 |  | 449,5547 | 450 |
| 43 |  | 419,5282 | 420 |
| 44 |  | 453,9732 | 454 |
| 45 |  | 433,5553 | 434 |
| 46 |  | 465,5541 | 466 |

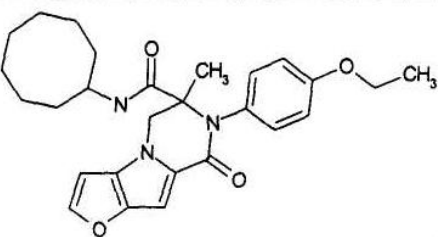
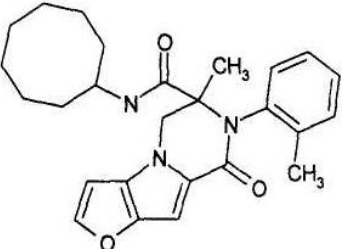
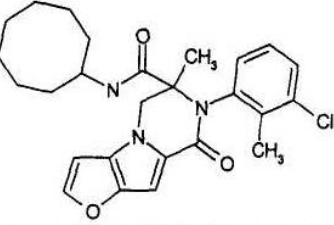

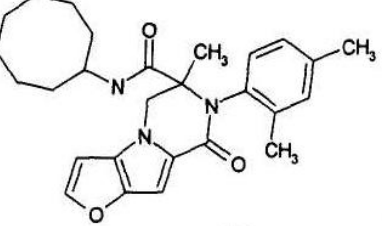
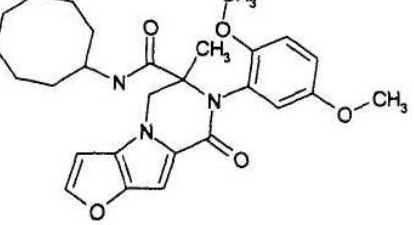
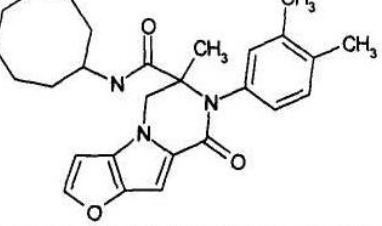
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|----|---|----------|-----|
| 47 |  | 433,5553 | 434 |
| 48 |  | 433,5553 | 434 |
| 49 |  | 469,9726 | 470 |
| 50 |  | 469,9726 | 470 |
| 51 |  | 419,5282 | 420 |
| 52 |  | 479,5812 | 480 |
| 53 |  | 449,5547 | 450 |

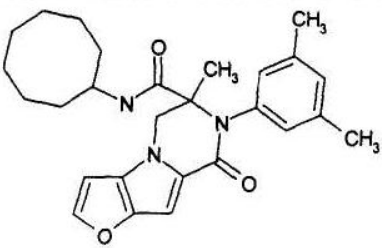
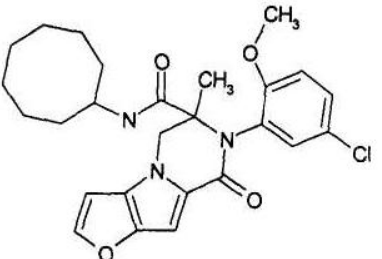

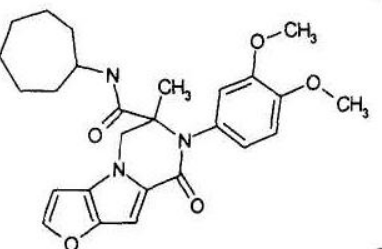
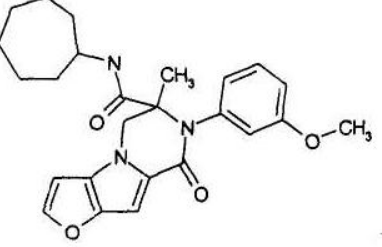
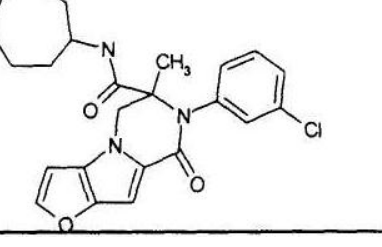
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|----|--|----------|-----|
| 54 | | 453,9732 | 454 |
| 55 | | 453,9732 | 454 |
| 56 | | 468,0003 | 469 |
| 57 | | 447,5824 | 448 |
| 58 | | 447,5824 | 448 |
| 59 | | 437,5186 | 438 |

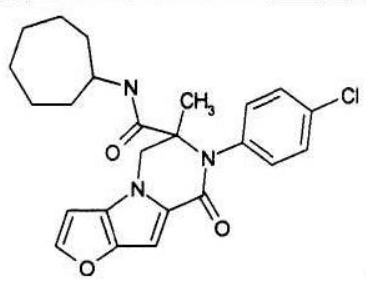
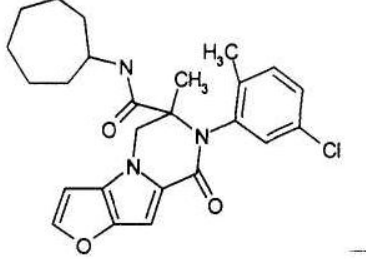
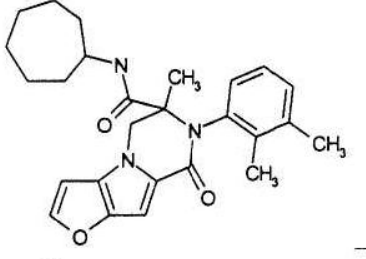
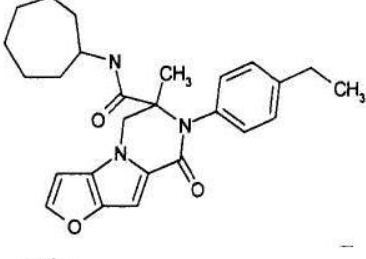
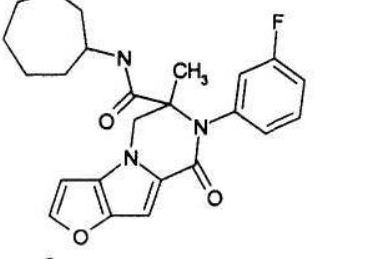
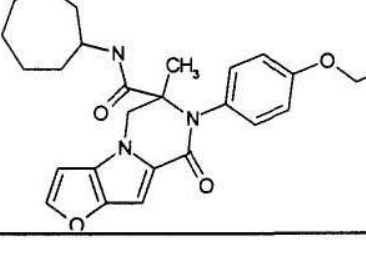
| | | | |
|----|---|----------|-----|
| 60 |  | 463,5818 | 464 |
| 61 |  | 433,5553 | 434 |
| 62 |  | 468,0003 | 469 |
| 63 |  | 447,5824 | 448 |
| 64 |  | 447,5824 | 448 |
| 65 |  | 447,5824 | 448 |

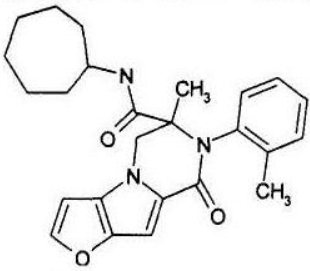

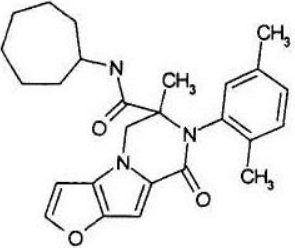
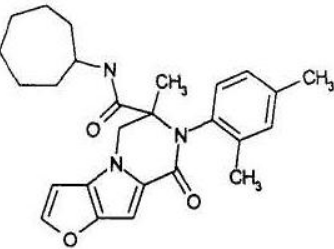
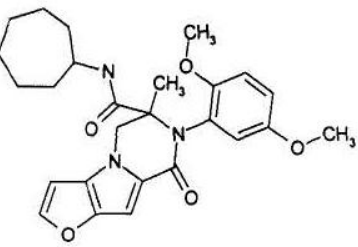
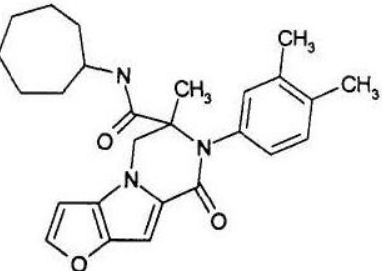
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|----|---|----------|-----|
| 66 |  | 447,5824 | 448 |
| 67 |  | 483,9997 | 484 |
| 68 |  | 483,9997 | 484 |
| 69 |  | 433,5553 | 434 |
| 70 |  | 479,5812 | 480 |
| 71 |  | 449,5547 | 450 |

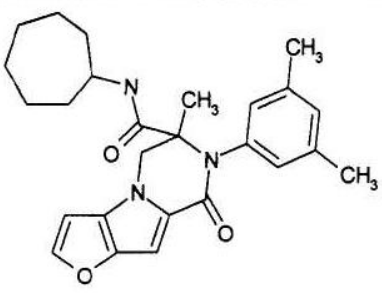
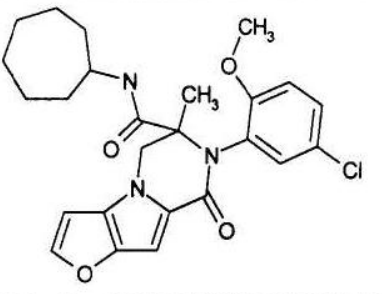
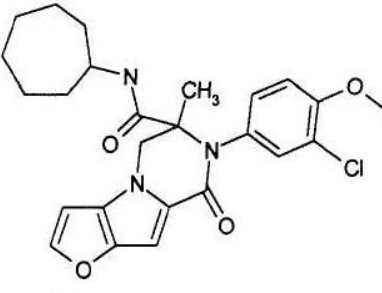
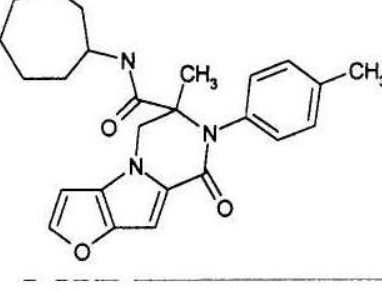
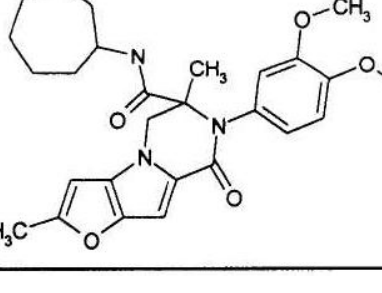
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|----|---|----------|-----|
| 72 |  | 453,9732 | 454 |
| 73 |  | 453,9732 | 454 |
| 74 |  | 468,0003 | 469 |
| 75 |  | 447,5824 | 448 |
| 76 |  | 447,5824 | 448 |
| 77 |  | 437,5186 | 438 |

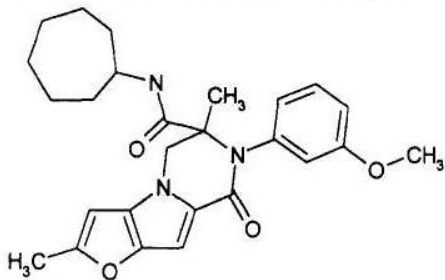
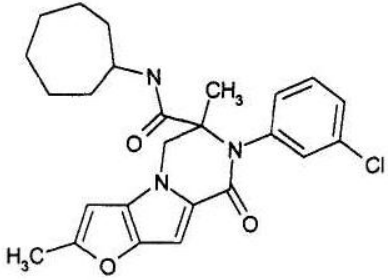
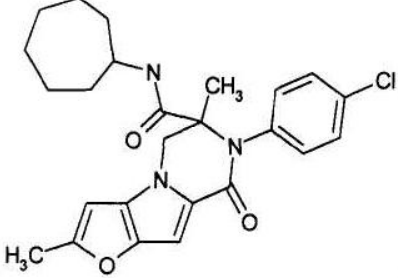
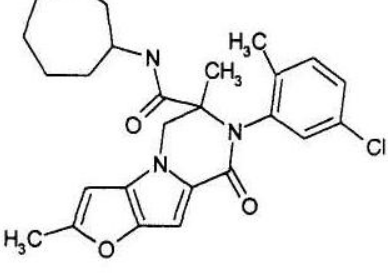
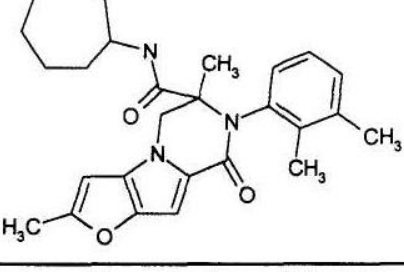
| | | | |
|----|---|----------|-----|
| 78 |  | 463,5818 | 464 |
| 79 |  | 433,5553 | 434 |
| 80 |  | 468,0003 | 469 |
| 81 |  | 447,5824 | 448 |
| 82 |  | 447,5824 | 448 |
| 83 |  | 479,5812 | 480 |
| 84 |  | 447,5824 | 448 |

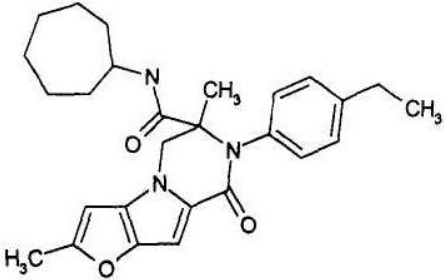
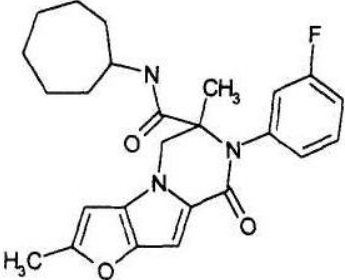
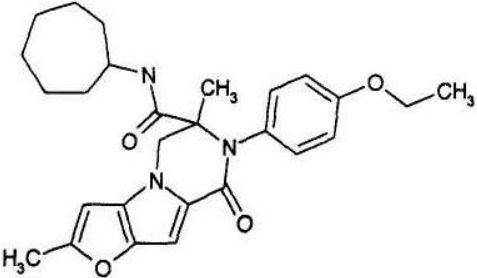
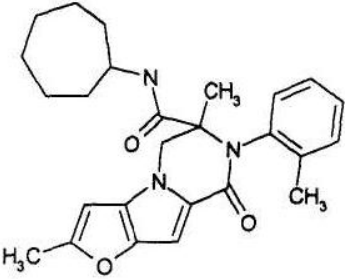
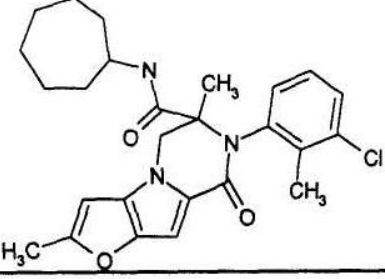
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|----|---|----------|-----|
| 85 |  | 447,5824 | 448 |
| 86 |  | 483,9997 | 484 |
| 87 |  | 433,5553 | 434 |
| 88 |  | 465,5541 | 466 |
| 89 |  | 435,5276 | 436 |
| 90 |  | 439,9461 | 440 |

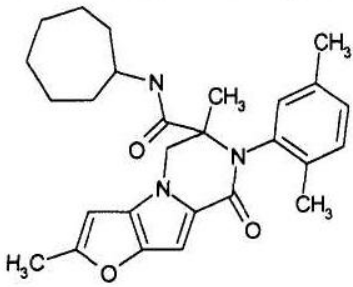
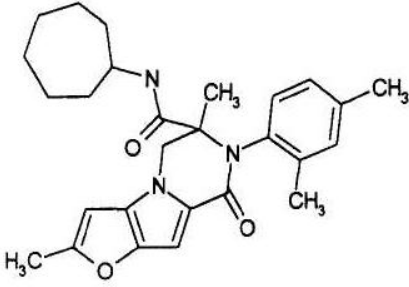
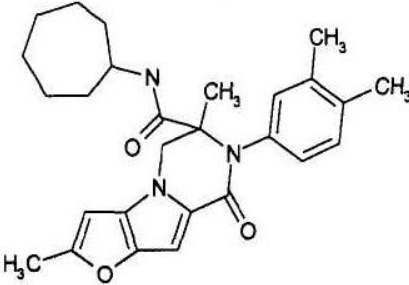
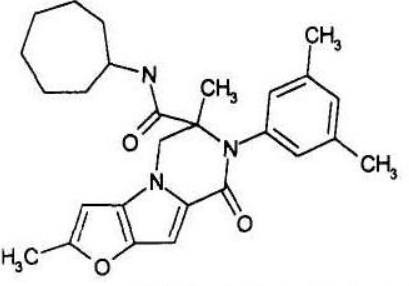
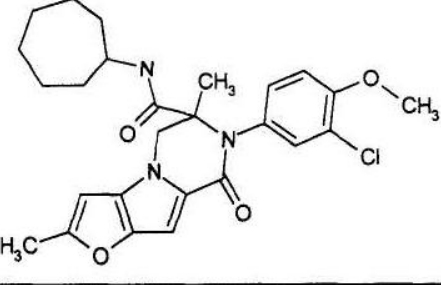
| | | | |
|----|---|----------|-----|
| 91 |  | 439,9461 | 440 |
| 92 |  | 453,9732 | 454 |
| 93 |  | 433,5553 | 434 |
| 94 |  | 433,5553 | 434 |
| 95 |  | 423,4915 | 424 |
| 96 |  | 449,5547 | 450 |

| | | | |
|-----|---|----------|-----|
| 97 |  | 419,5282 | 420 |
| 98 |  | 453,9732 | 454 |
| 99 |  | 433,5553 | 434 |
| 100 |  | 433,5553 | 434 |
| 101 |  | 465,5541 | 466 |
| 102 |  | 433,5553 | 434 |

| | | | |
|-----|---|----------|-----|
| 103 |  | 433,5553 | 434 |
| 104 |  | 469,9726 | 470 |
| 105 |  | 469,9726 | 470 |
| 106 |  | 419,5282 | 420 |
| 107 |  | 479,5812 | 480 |

| | | | |
|-----|---|----------|-----|
| 108 |  | 449,5547 | 450 |
| 109 |  | 453,9732 | 454 |
| 110 |  | 453,9732 | 454 |
| 111 |  | 468,0003 | 469 |
| 112 |  | 447,5824 | 448 |

| | | | |
|-----|---|----------|-----|
| 113 |  | 447,5824 | 448 |
| 114 |  | 437,5186 | 438 |
| 115 |  | 463,5818 | 464 |
| 116 |  | 433,5553 | 434 |
| 117 |  | 468,0003 | 469 |

| | | | |
|-----|---|----------|-----|
| 118 |  | 447,5824 | 448 |
| 119 |  | 447,5824 | 448 |
| 120 |  | 447,5824 | 448 |
| 121 |  | 447,5824 | 448 |
| 122 |  | 483,9997 | 484 |

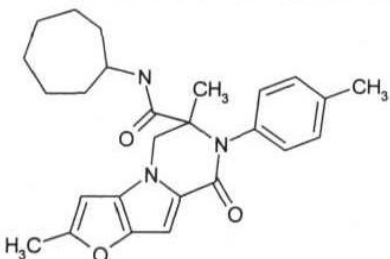
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|-----|---|----------|-----|--|
| 123 |  | 433,5553 | 434 | |
|-----|---|----------|-----|--|

Таблица 1.17(3)

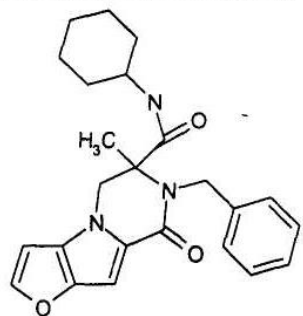
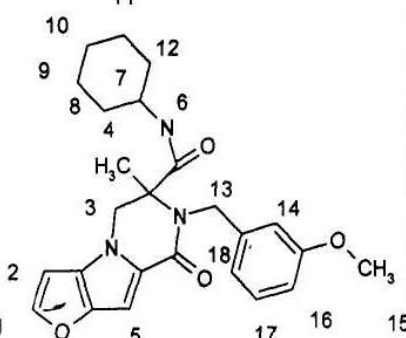
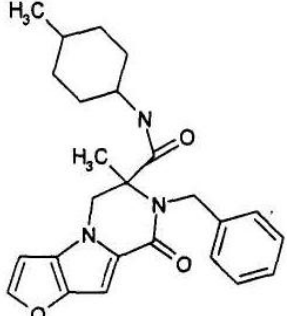
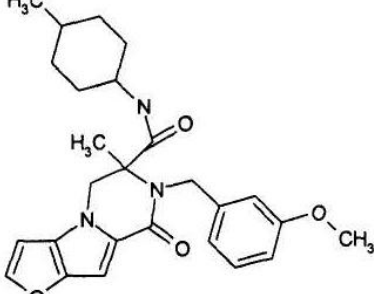
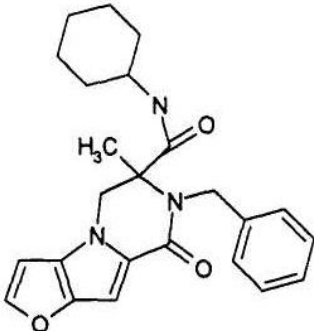
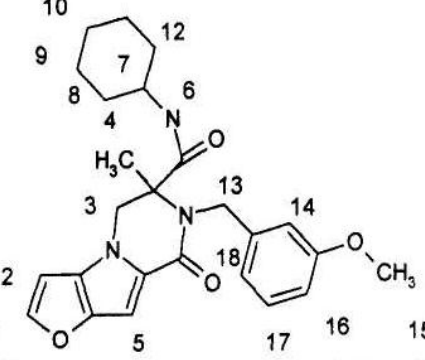
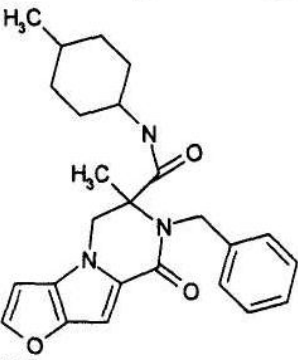
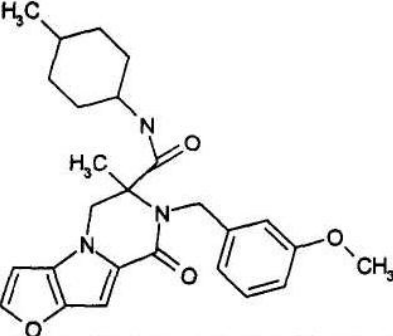
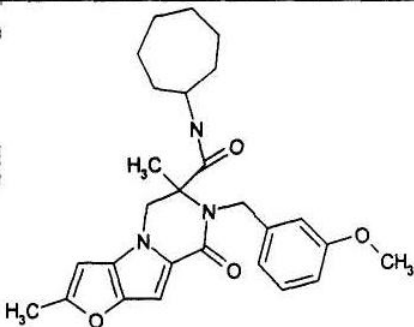
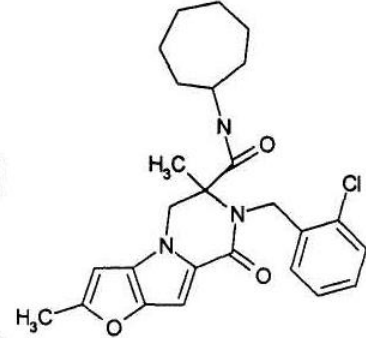
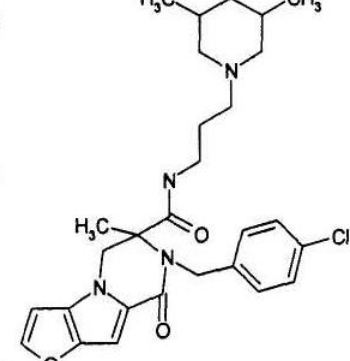
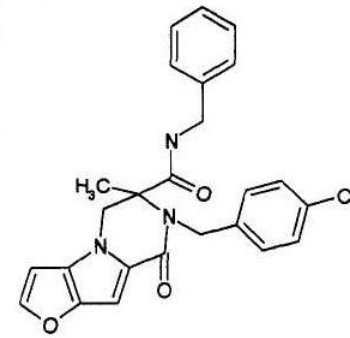
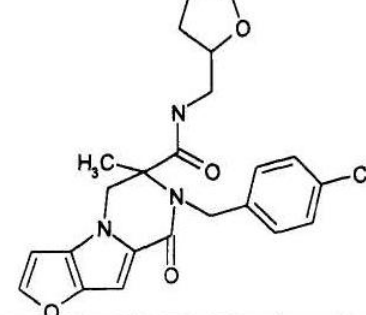
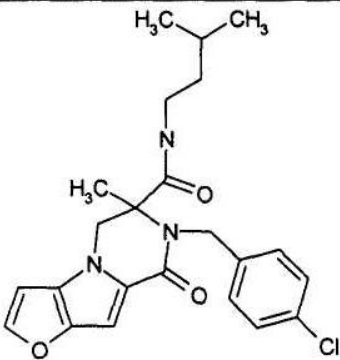
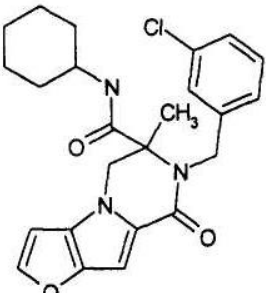
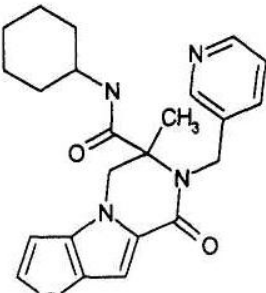
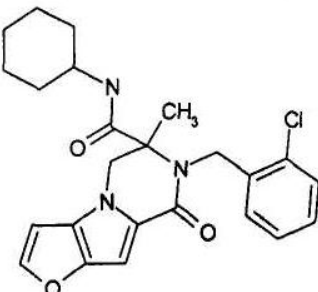
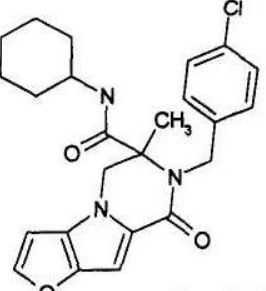
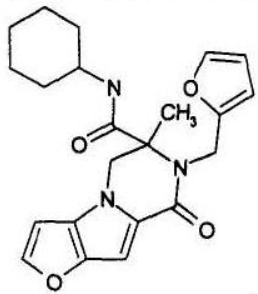
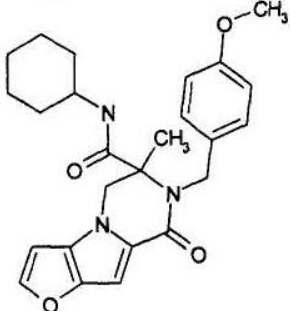
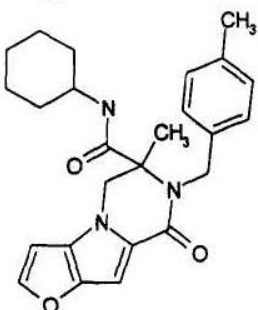
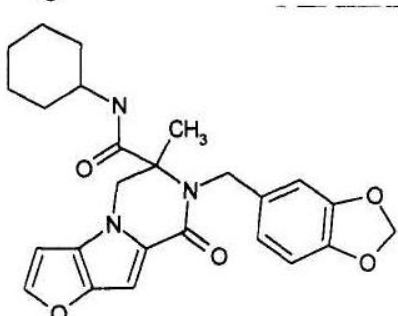
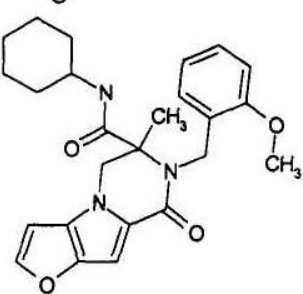
| № п.п. | Формула | Мол.масса | m/z (M+1) | ПМР спектр |
|--------|---|-----------|-----------|---|
| 1 |  | 405,50109 | 406 | |
| 2 |  | 435,52758 | 436 | 0.92 - 1.74 (8, 9, 10, 11, 12; 10H; m.), 1.53 (4; 3H, s.), 3.47 (7; 1 H; b.m.), 3.77 (16; 3H; s.), 4.01 + 4.78 (3; 2H; AB; 12.4 Hz), 4.23 + 5.23 (13; 2H; AB; 16.1 Hz), 6.56 (5; 1H; s.), 6.61 (2; 1H; d.; 1.1 Hz), 6.72 (16; 1H; d.; 3.4 Hz), 6.88 (14, 1... |
| 3 |  | 419,52818 | 420 | |
| 4 |  | 449,55467 | 450 | |

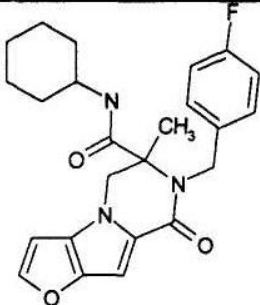

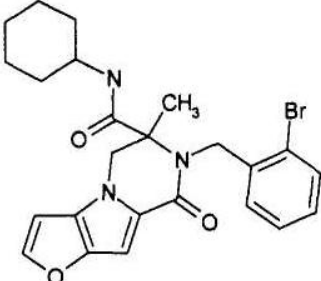
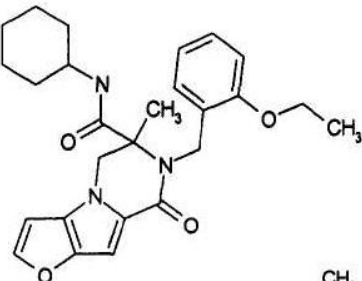
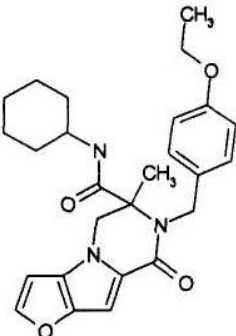
Таблица 1.17(3)


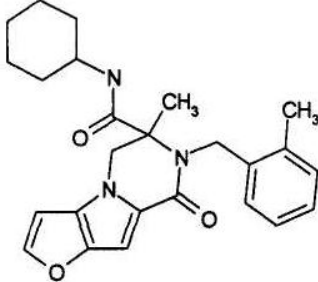
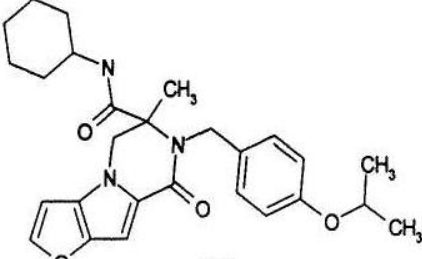
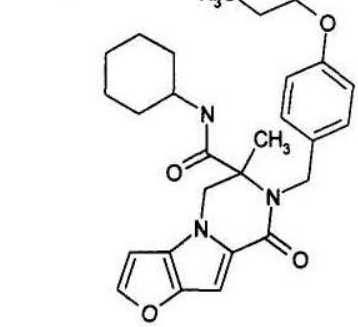

| № п.п. | Формула | Мол.маса | m/z (M+1) | ПМР спектр |
|--------|---|-----------|-----------|---|
| 1 |  | 405,50109 | 406 | |
| 2 |  | 435,52758 | 436 | 0.92 - 1.74 (8, 9, 10, 11, 12; 10H; m.), 1.53 (4; 3H, s.), 3.47 (7; 1 H; b.m.), 3.77 (16; 3H; s.), 4.01 + 4.78 (3; 2H; AB; 12.4 Hz), 4.23 + 5.23 (13; 2H; AB; 16.1 Hz), 6.56 (5; 1H; s.), 6.61 (2; 1H; d.; 1.1 Hz), 6.72 (16; 1H; d.; 3.4 Hz), 6.88 (14, 1... |
| 3 |  | 419,52818 | 420 | |
| 4 |  | 449,55467 | 450 | |

| | | | |
|---|---|-----------|-----|
| 5 |  | 463,58176 | 464 |
| 6 |  | 468,0003 | 469 |
| 7 |  | 511,06915 | 512 |
| 8 |  | 447,92539 | 448 |
| 9 |  | 441,91843 | 442 |

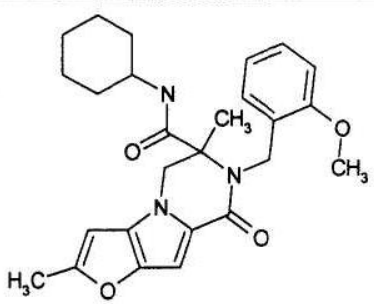
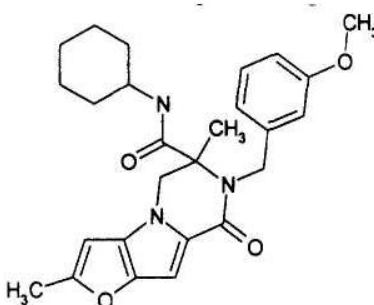
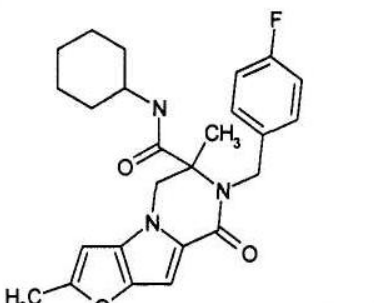
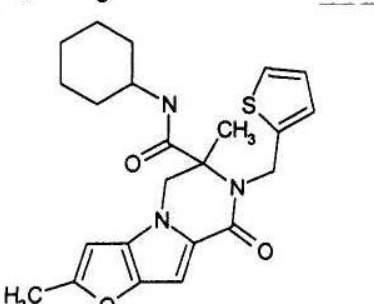
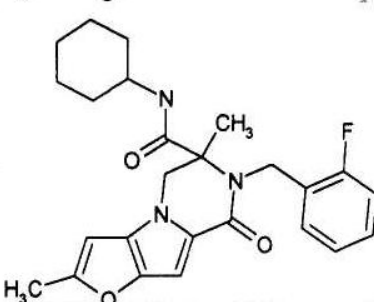
| | | | |
|----|---|-----------|-----|
| 10 |  | 427,93497 | 428 |
| 11 |  | 439,94612 | 440 |
| 12 |  | 406,48867 | 407 |
| 13 |  | 439,94612 | 440 |
| 14 |  | 439,94612 | 440 |

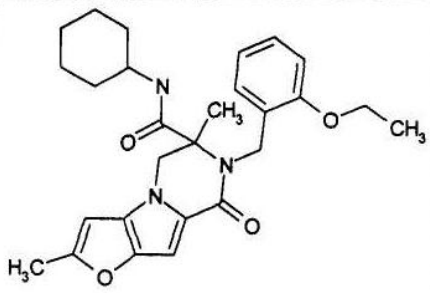
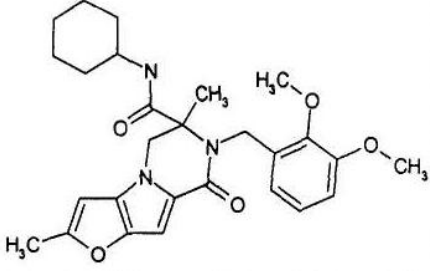
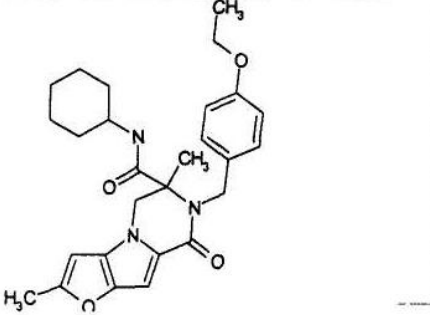

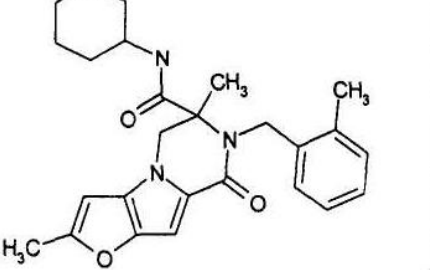
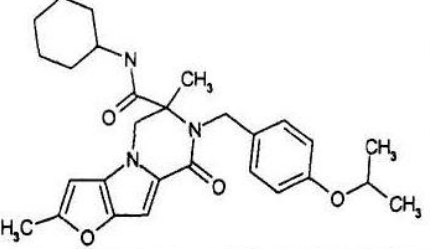
| | | | | |
|----|---|-----------|-----|--|
| 15 |  | 395,46225 | 396 | |
| 16 |  | 435,52758 | 436 | |
| 17 |  | 419,52818 | 420 | |
| 18 |  | 449,51104 | 450 | |
| 19 |  | 435,52758 | 436 | |

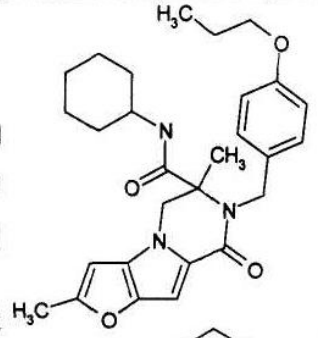

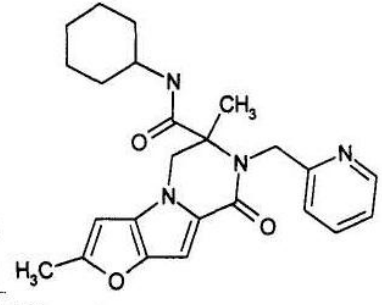
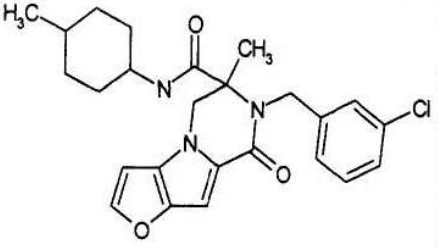

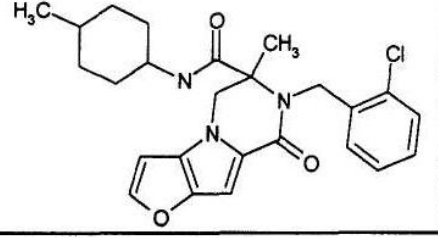
| | | | |
|----|---|-----------|-----|
| 20 |  | 423,49152 | 424 |
| 21 |  | 411,52685 | 412 |
| 22 |  | 484,39712 | 485 |
| 23 |  | 449,55467 | 450 |
| 24 |  | 449,55467 | 450 |

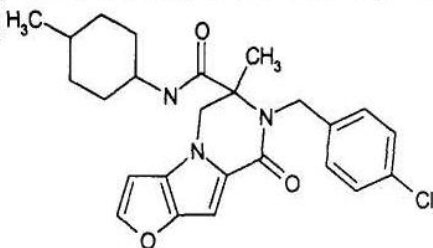

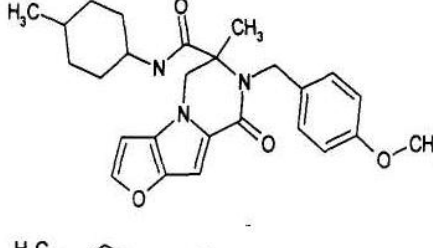
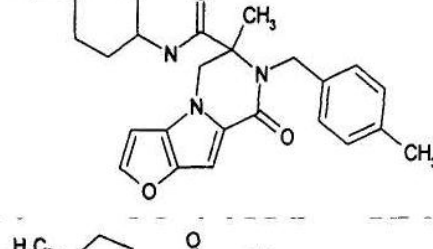
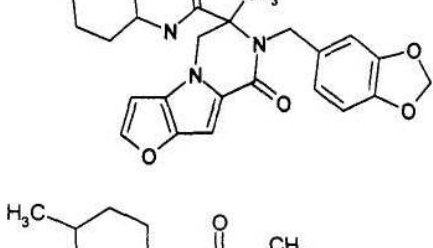
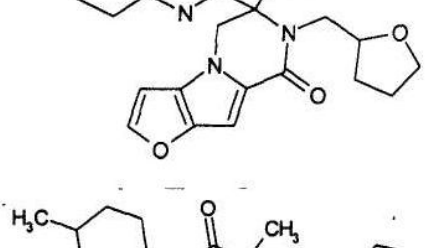
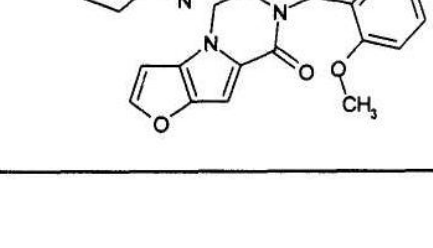
| | | | |
|----|---|-----------|-----|
| 25 |  | 484,39712 | 485 |
| 26 |  | 419,52818 | 420 |
| 27 |  | 463,58176 | 464 |
| 28 |  | 463,58176 | 464 |
| 29 |  | 423,49152 | 424 |

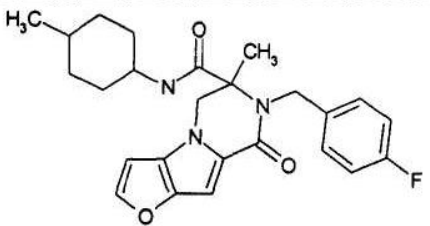



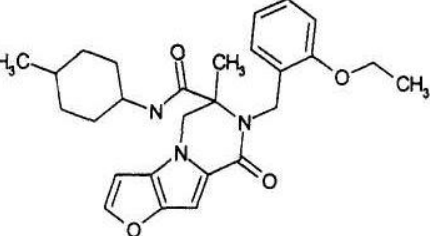
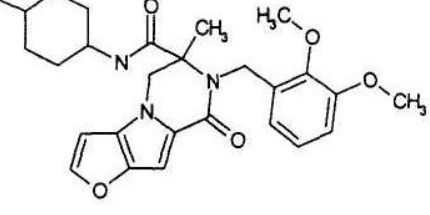
| | | | |
|----|--|-----------|-----|
| 30 | | 453,97321 | 454 |
| 31 | | 420,51576 | 421 |
| 32 | | 419,52818 | 420 |
| 33 | | 453,97321 | 454 |
| 34 | | 453,97321 | 454 |

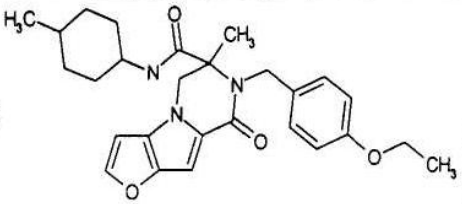
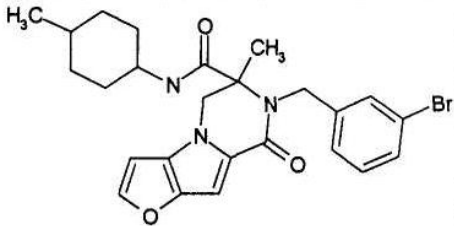

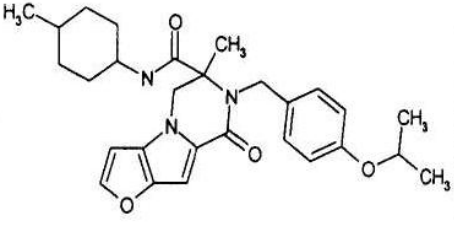
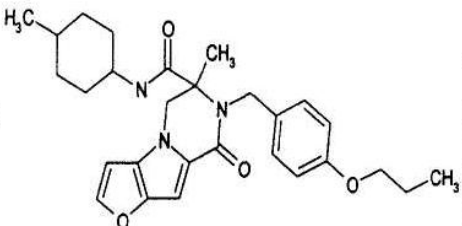
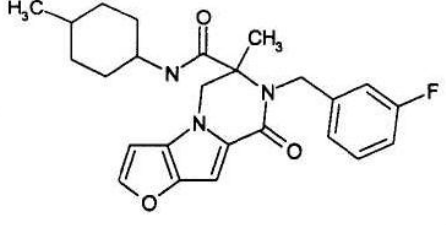
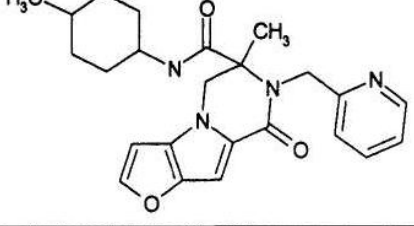
| | | | |
|----|---|-----------|-----|
| 40 |  | 449,55467 | 450 |
| 41 |  | 449,55467 | 450 |
| 42 |  | 437,51861 | 438 |
| 43 |  | 425,55394 | 426 |
| 44 |  | 437,51861 | 438 |

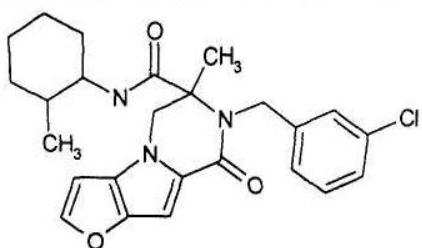
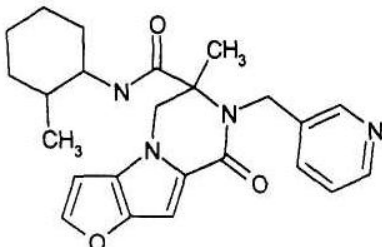
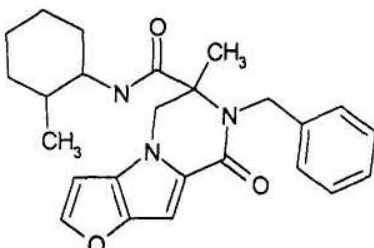
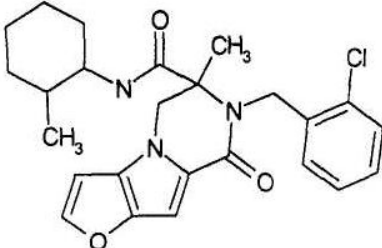
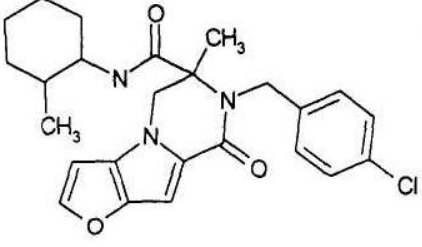
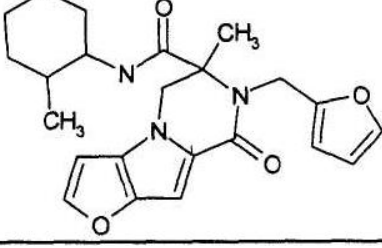
| | | | |
|----|---|-----------|-----|
| 45 |  | 463,58176 | 464 |
| 46 |  | 479,58116 | 480 |
| 47 |  | 463,58176 | 464 |
| 48 |  | 498,42421 | 499 |
| 49 |  | 433,55527 | 434 |
| 50 |  | 477,60885 | 478 |

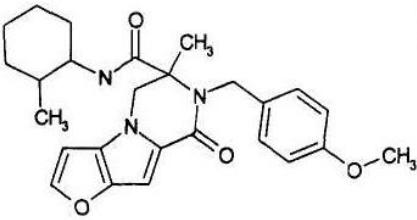
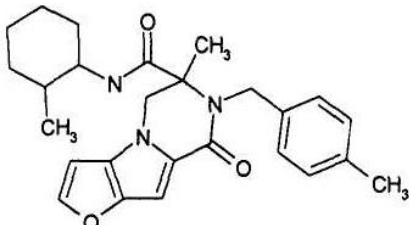
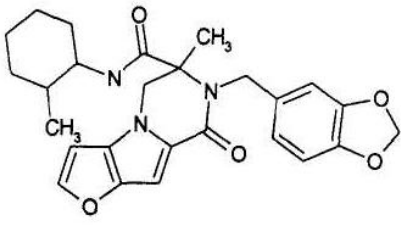
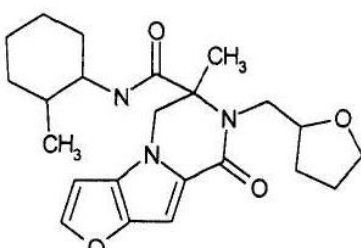

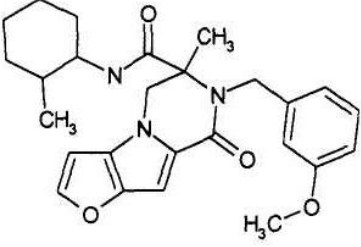
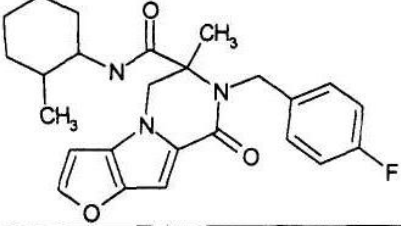
| | | | |
|----|---|-----------|-----|
| 51 |  | 477,60885 | 478 |
| 52 |  | 437,51861 | 438 |
| 53 |  | 420,51576 | 421 |
| 54 |  | 453,97321 | 454 |
| 55 |  | 420,51576 | 421 |
| 56 |  | 453,97321 | 454 |

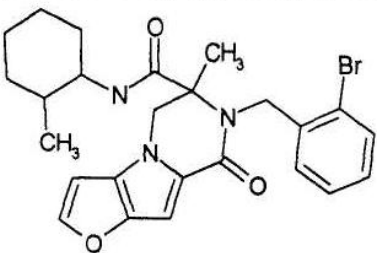
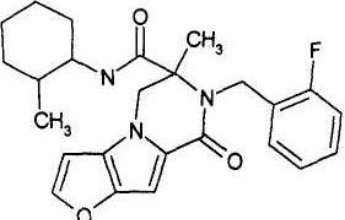
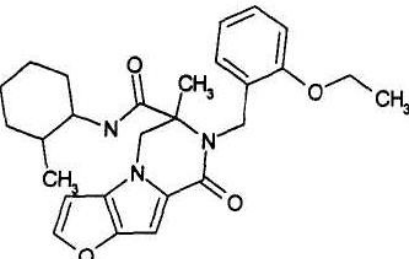
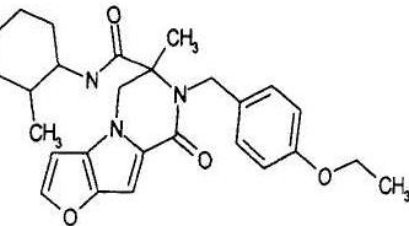
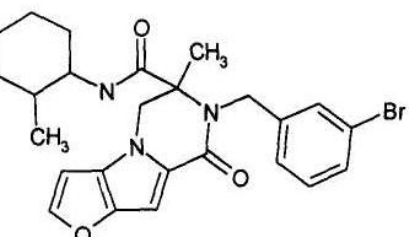
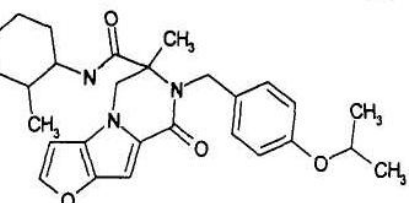
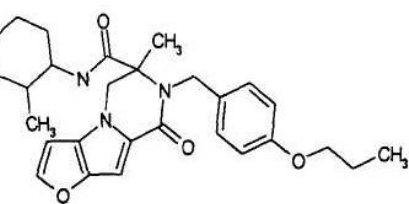
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| 58 |  | 409,48934 | 410 |
| 59 |  | 449,55467 | 450 |
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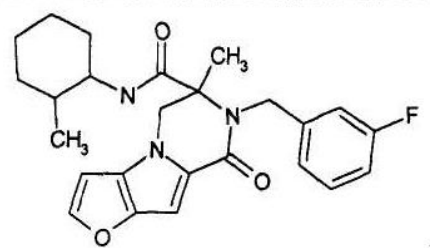
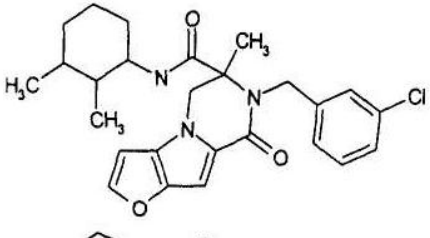
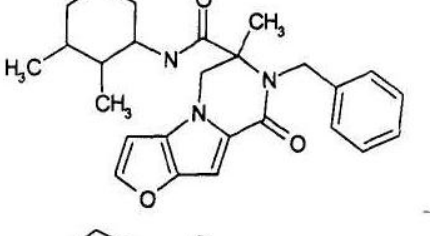
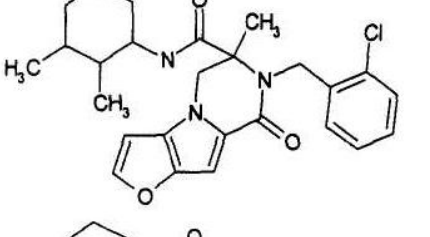
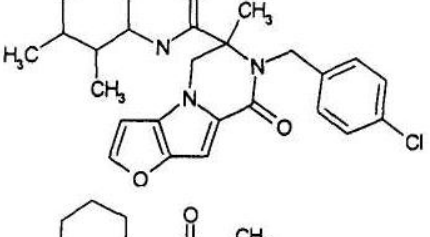
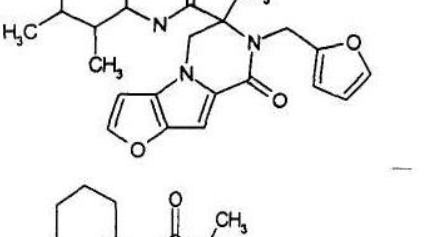
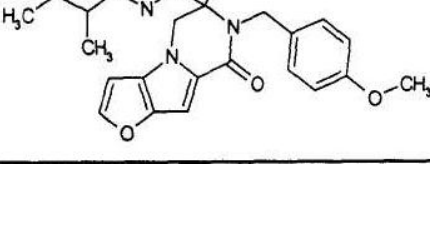
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| 65 |  | 425,55394 | 426 |
| 66 |  | 498,42421 | 499 |
| 67 |  | 437,51861 | 438 |
| 68 |  | 463,58176 | 464 |
| 69 |  | 479,58116 | 480 |

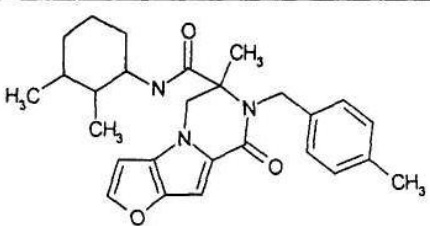
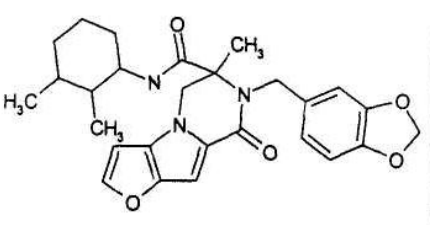
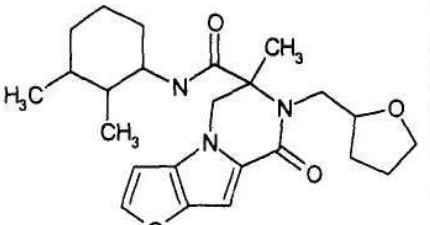
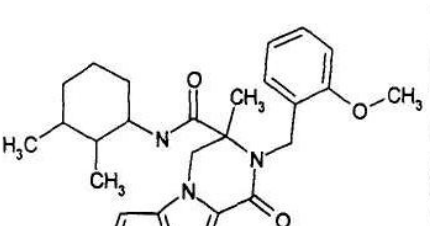
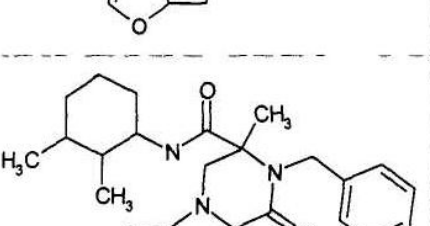
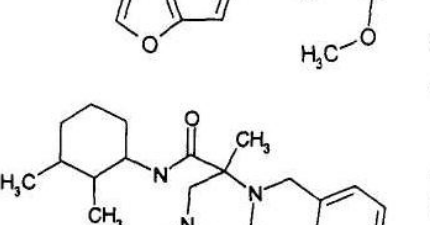
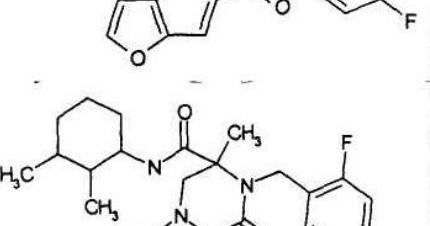
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| 71 |  | 498,42421 | 499 |
| 72 |  | 433,55527 | 434 |
| 73 |  | 477,60885 | 478 |
| 74 |  | 477,60885 | 478 |
| 75 |  | 437,51861 | 438 |
| 76 |  | 420,51576 | 421 |

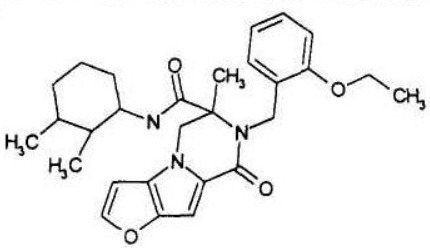
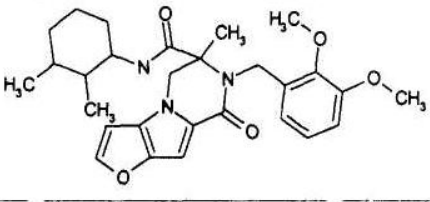
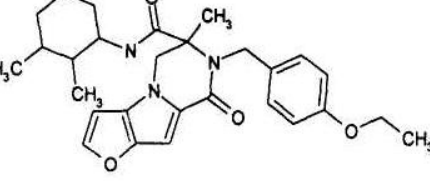
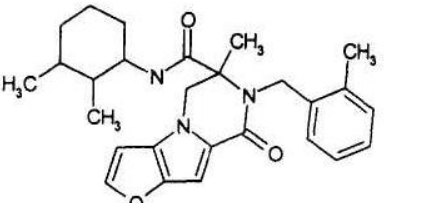
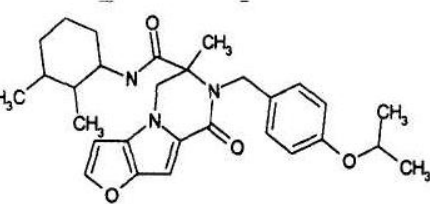
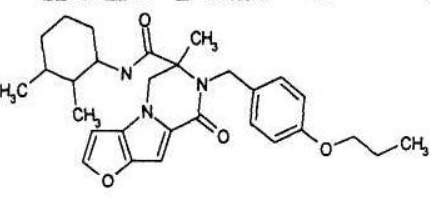
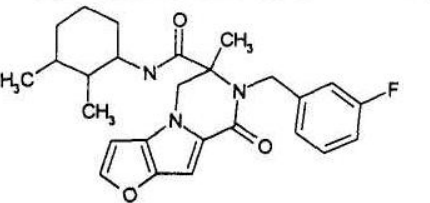
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| 78 |  | 420,51576 | 421 |
| 79 |  | 419,52818 | 420 |
| 80 |  | 453,97321 | 454 |
| 81 |  | 453,97321 | 454 |
| 82 |  | 409,48934 | 410 |

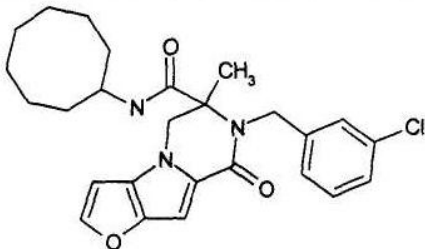
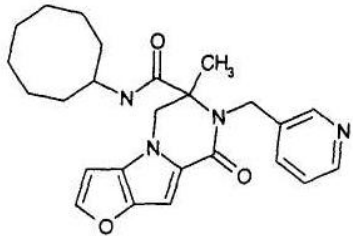
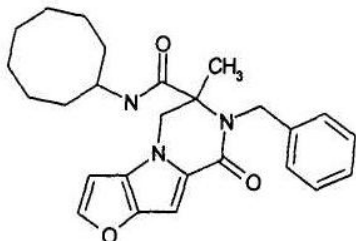
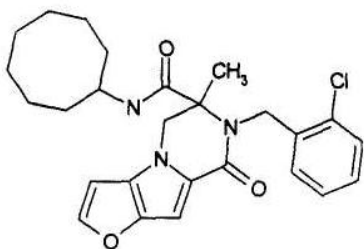
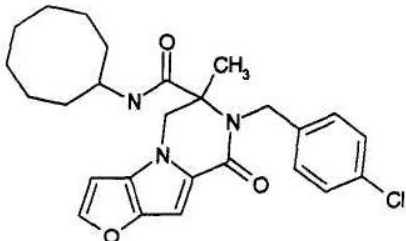
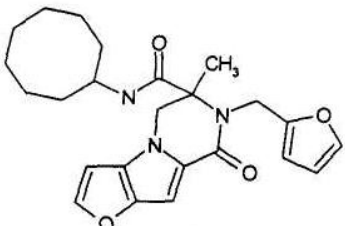
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| 83 |  | 449,55467 | 450 |
| 84 |  | 433,55527 | 434 |
| 85 |  | 463,53813 | 464 |
| 86 |  | 413,52122 | 414 |
| 87 |  | 449,55467 | 450 |
| 88 |  | 449,55467 | 450 |
| 89 |  | 437,51861 | 438 |

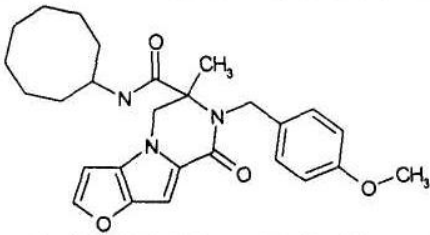
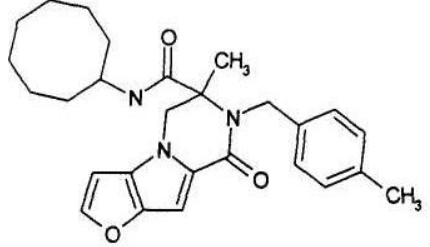

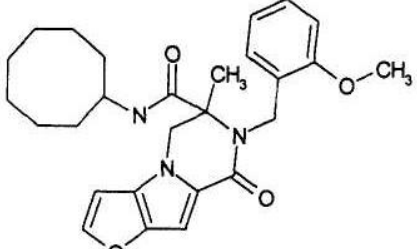
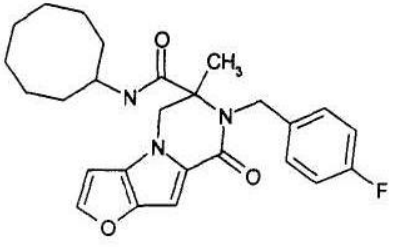

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|----|---|-----------|-----|
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| 91 |  | 437,51861 | 438 |
| 92 |  | 463,58176 | 464 |
| 93 |  | 463,58176 | 464 |
| 94 |  | 498,42421 | 499 |
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| 96 |  | 477,60885 | 478 |

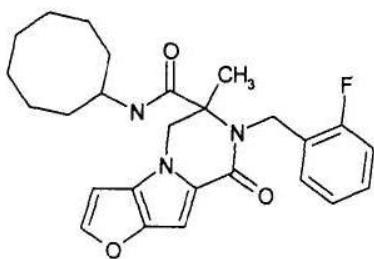
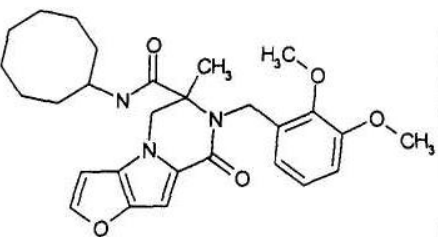
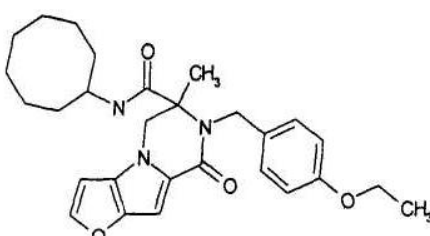

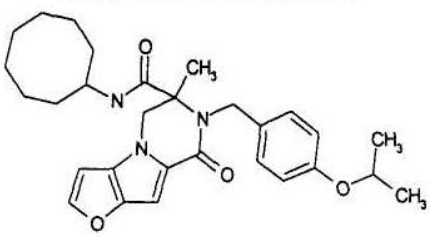
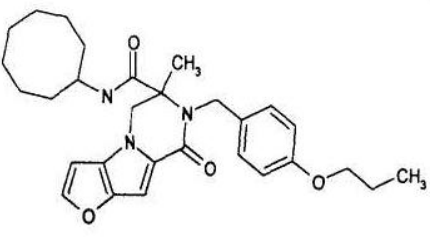
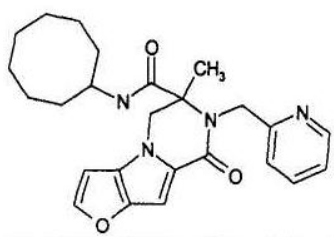
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| 98 |  | 468,0003 | 469 |
| 99 |  | 433,55527 | 434 |
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| 101 |  | 468,0003 | 469 |
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| 103 |  | 463,58176 | 464 |


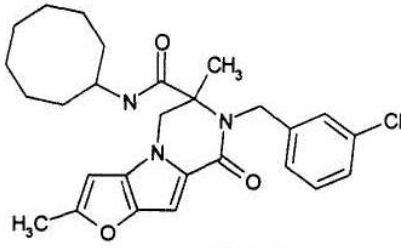
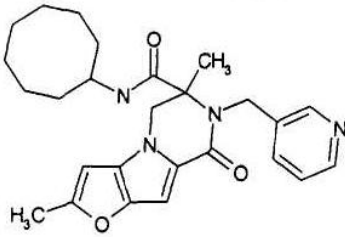
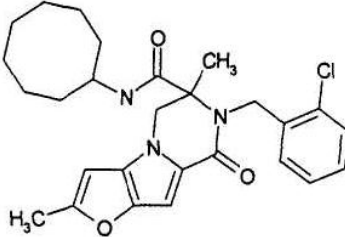
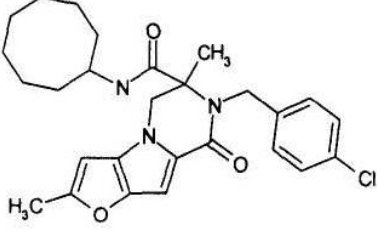
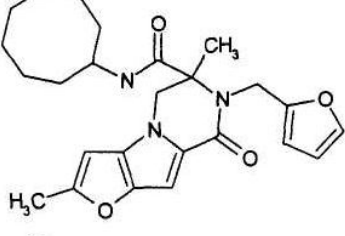
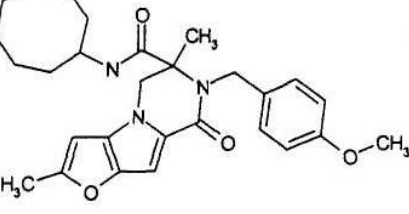
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| 105 |  | 477,56522 | 478 |
| 106 |  | 427,54831 | 428 |
| 107 |  | 463,58176 | 464 |
| 108 |  | 463,58176 | 464 |
| 109 |  | 451,5457 | 452 |
| 110 |  | 451,5457 | 452 |


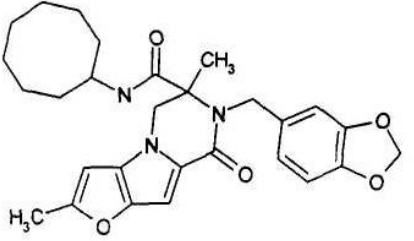
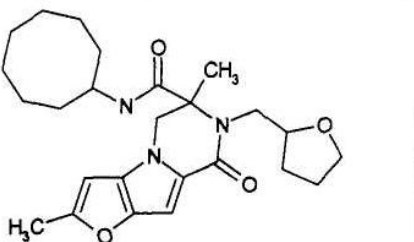
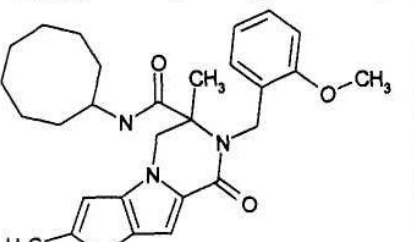
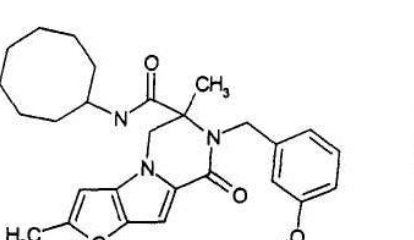
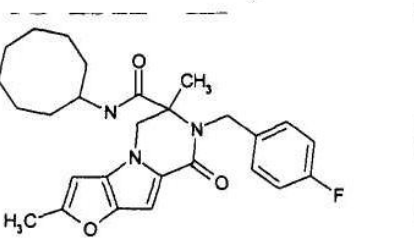
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| 112 |  | 493,60825 | 494 |
| 113 |  | 477,60885 | 478 |
| 114 |  | 447,58236 | 448 |
| 115 |  | 491,63594 | 492 |
| 116 |  | 491,63594 | 492 |
| 117 |  | 451,5457 | 452 |

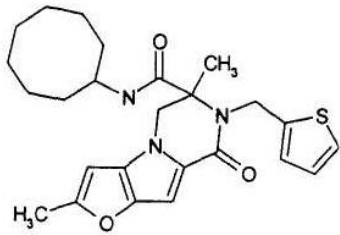
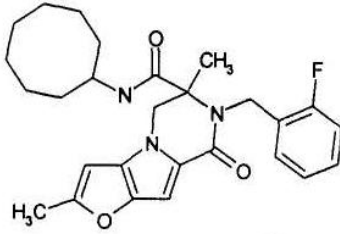
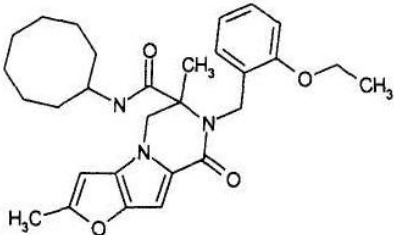
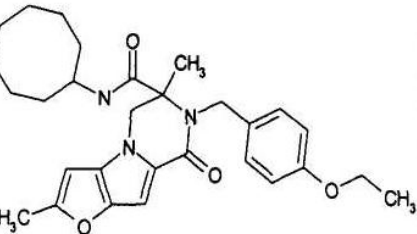
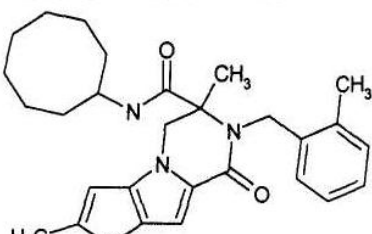
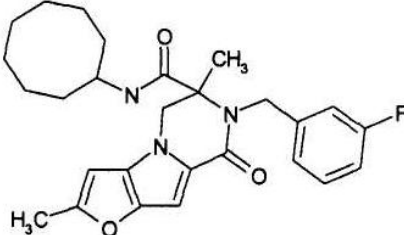
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| 119 |  | 434,54285 | 435 |
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| 123 |  | 423,51643 | 424 |

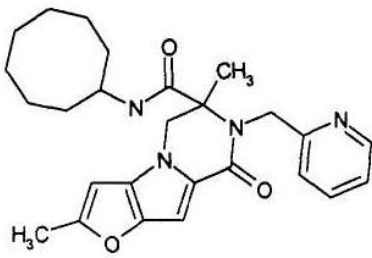
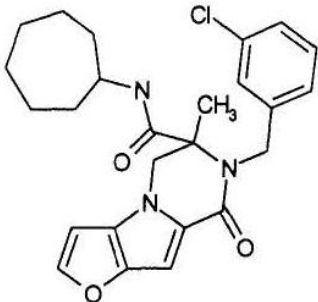
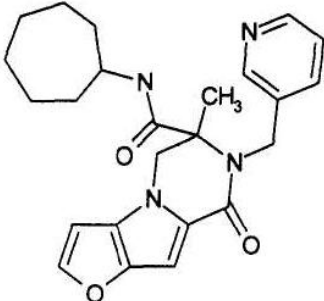

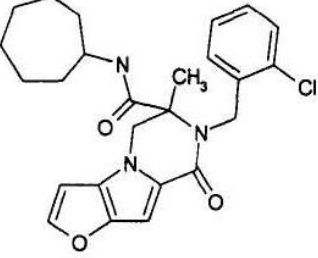
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|-----|---|-----------|-----|
| 124 |  | 463,58176 | 464 |
| 125 |  | 447,58236 | 448 |
| 126 |  | 427,54831 | 428 |
| 127 |  | 463,58176 | 464 |
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| 129 |  | 439,58103 | 440 |

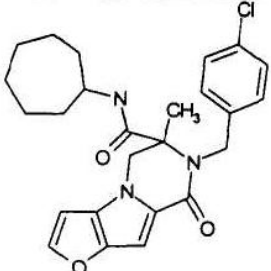
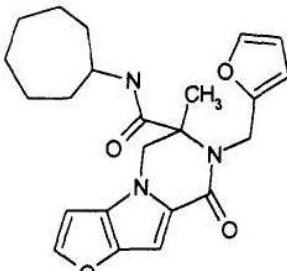
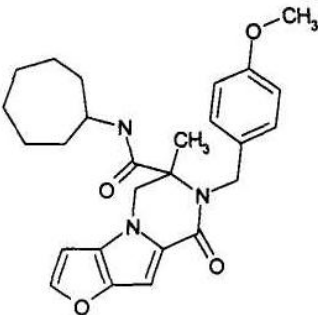
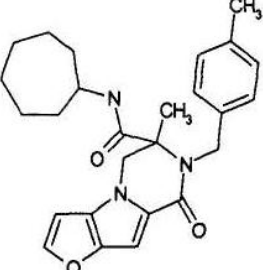
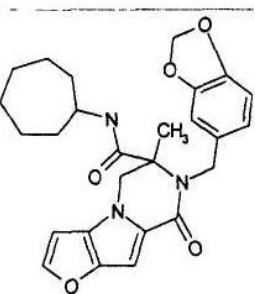
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|-----|---|-----------|-----|
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| 131 |  | 493,60825 | 494 |
| 132 |  | 477,60885 | 478 |
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| 136 |  | 434,54285 | 435 |

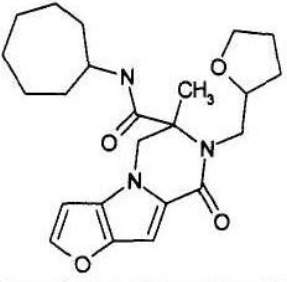
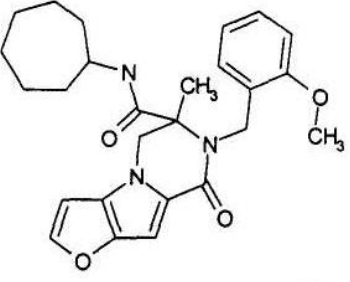
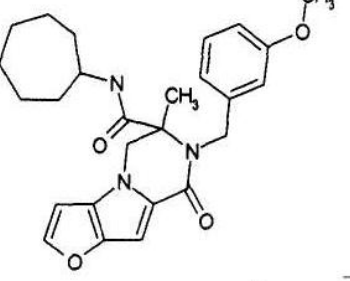
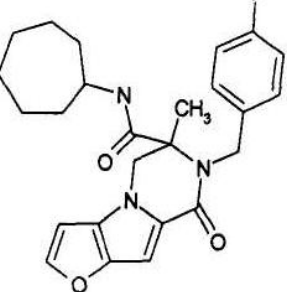

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| 137 |  | 454,61776 | 455 |
| 138 |  | 482,02739 | 483 |
| 139 |  | 448,56994 | 449 |
| 140 |  | 482,02739 | 483 |
| 141 |  | 482,02739 | 483 |
| 142 |  | 437,54352 | 438 |
| 143 |  | 477,60885 | 478 |

| | | | |
|-----|---|-----------|-----|
| 144 |  | 461,60945 | 462 |
| 145 |  | 491,59231 | 492 |
| 146 |  | 441,5754 | 442 |
| 147 |  | 477,60885 | 478 |
| 148 |  | 477,60885 | 478 |
| 149 |  | 465,57279 | 466 |

| | | | |
|-----|---|-----------|-----|
| 150 |  | 453,60812 | 454 |
| 151 |  | 465,57279 | 466 |
| 152 |  | 491,63594 | 492 |
| 153 |  | 491,63594 | 492 |
| 154 |  | 461,60945 | 462 |
| 155 |  | 465,57279 | 466 |

| | | | |
|-----|---|-----------|-----|
| 156 |  | 448,56994 | 449 |
| 157 |  | 453,97321 | 454 |
| 158 |  | 420,51576 | 421 |
| 159 |  | 419,52818 | 420 |
| 160 |  | 453,97321 | 454 |

| | | | | |
|-----|---|-----------|-----|--|
| 161 |  | 453,97321 | 454 | |
| 162 |  | 409,48934 | 410 | |
| 163 |  | 449,55467 | 450 | |
| 164 |  | 433,55527 | 434 | |
| 165 |  | 463,53813 | 464 | |

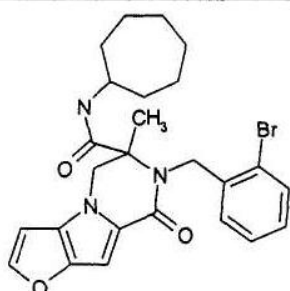
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|-----|---|-----------|-----|
| 166 |  | 413,52122 | 414 |
| 167 |  | 449,55467 | 450 |
| 168 |  | 449,55467 | 450 |
| 169 |  | 437,51861 | 438 |
| 170 |  | 425,55394 | 426 |

971

84447

972

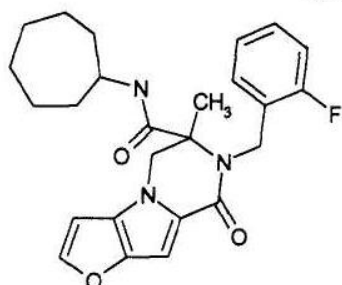
171



498,42421

499

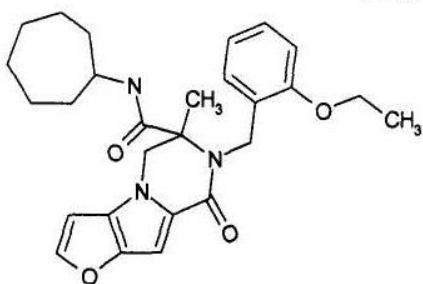
172



437,51861

438

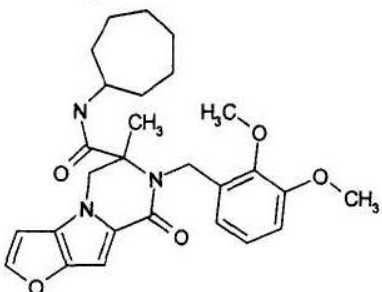
173



463,58176

464

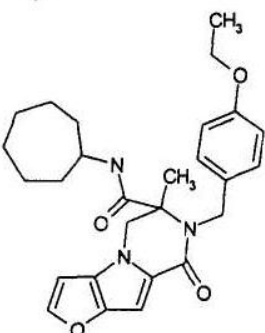
174



479,58116

480

175





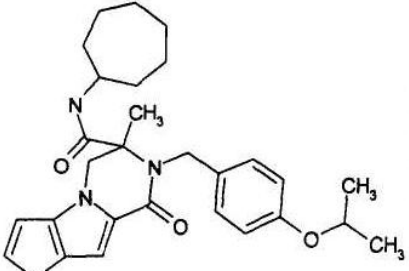
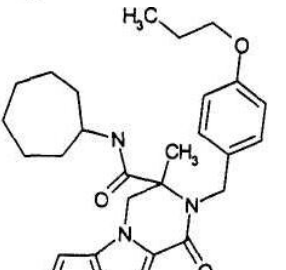

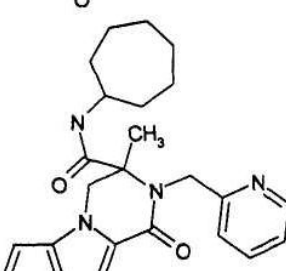
463 58176

464

973

84447

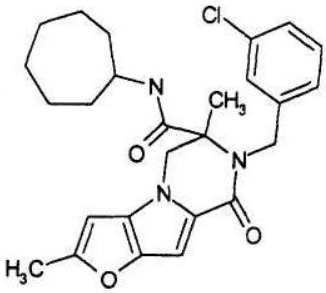
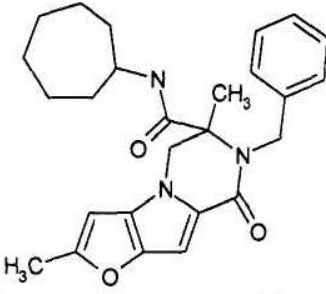
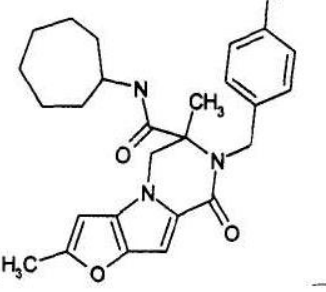
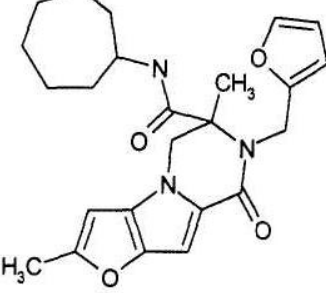
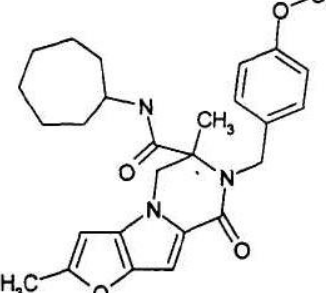
974


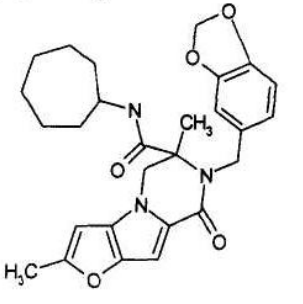
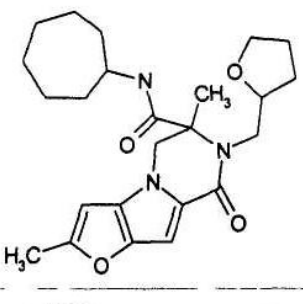
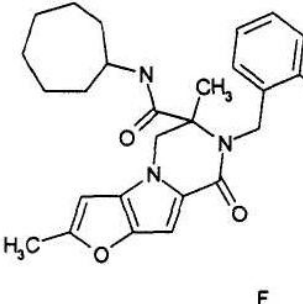

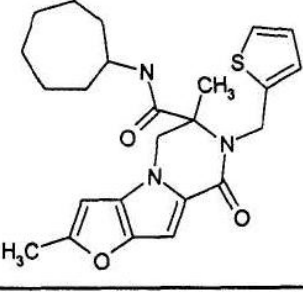
| | | | |
|-----|---|-----------|-----|
| 176 |  | 498,42421 | 499 |
| 177 |  | 433,55527 | 434 |
| 178 |  | 477,60885 | 478 |
| 179 |  | 477,60885 | 478 |
| 180 |  | 437,51861 | 438 |
| 181 |  | 420,51576 | 421 |

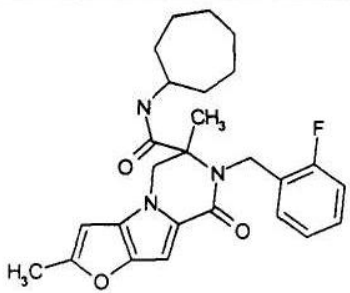
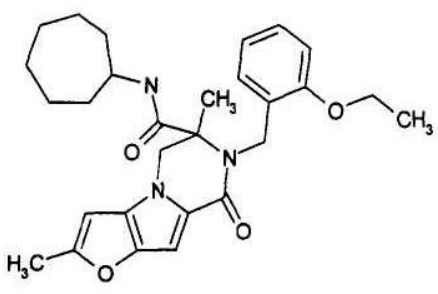
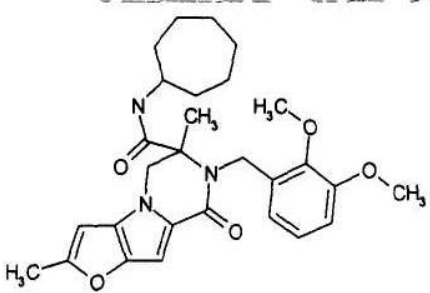
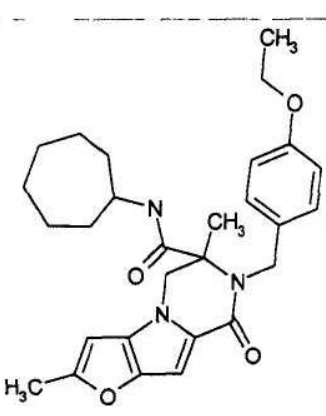
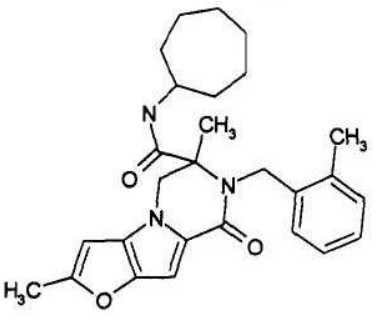
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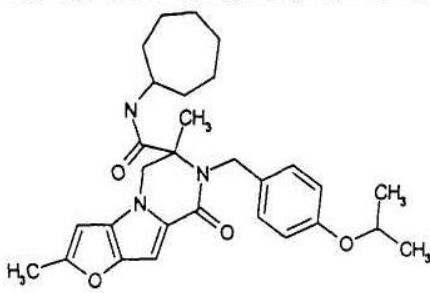
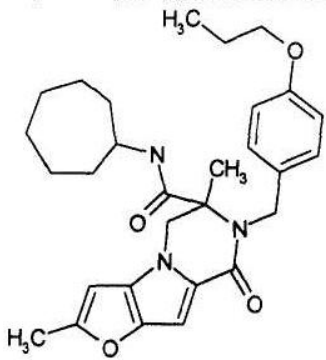
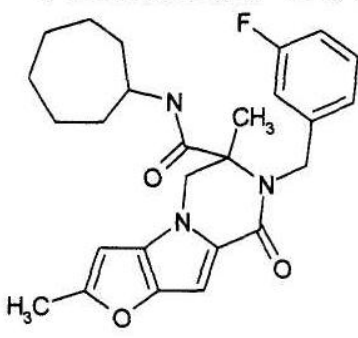
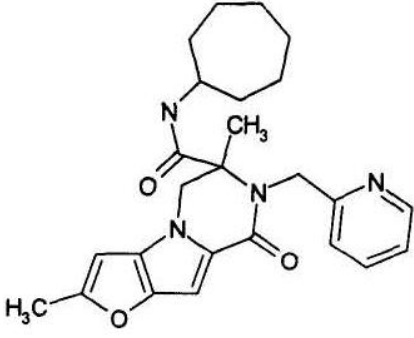
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976

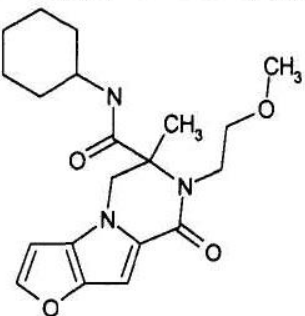
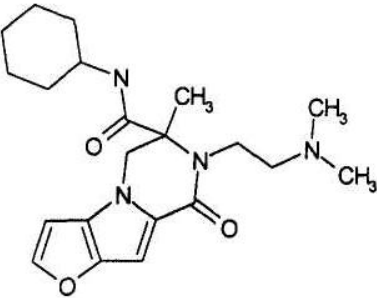
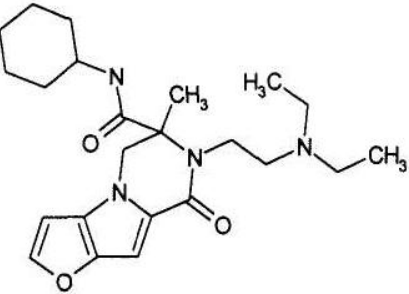
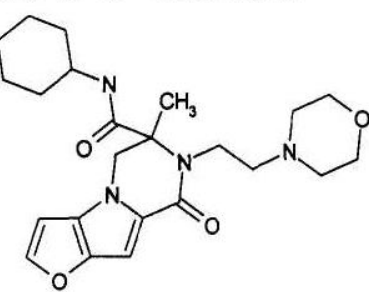
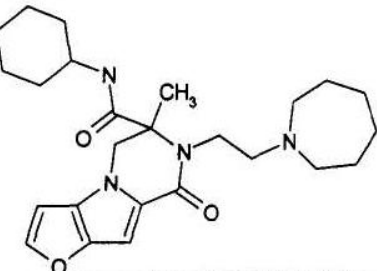
| | | | |
|-----|---|-----------|-----|
| 182 |  | 468,0003 | 469 |
| 183 |  | 433,55527 | 434 |
| 184 |  | 468,0003 | 469 |
| 185 |  | 423,51643 | 424 |
| 186 |  | 463,58176 | 464 |

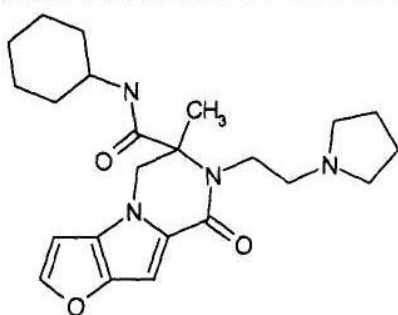
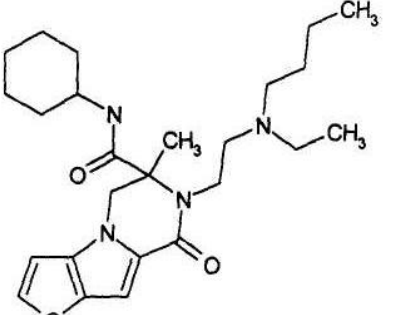
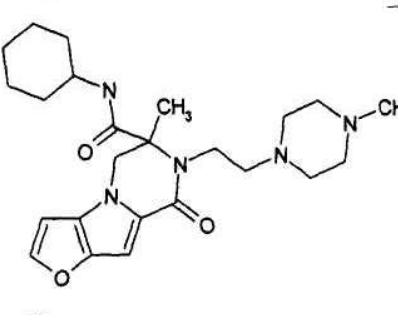
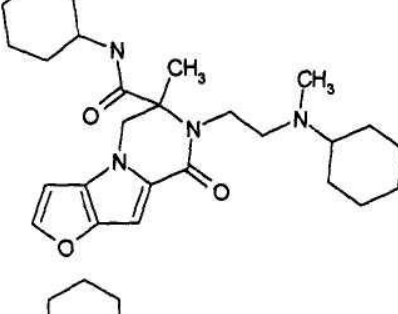
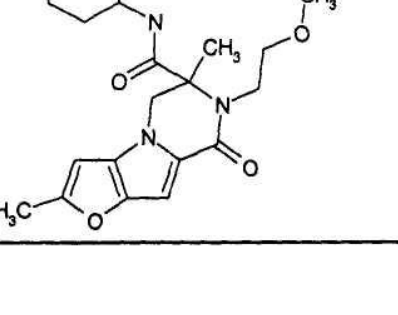
| | | | |
|-----|---|-----------|-----|
| 187 |  | 447,58236 | 448 |
| 188 |  | 477,56522 | 478 |
| 189 |  | 427,54831 | 428 |
| 190 |  | 463,58176 | 464 |
| 191 |  | 451,5457 | 452 |
| 192 |  | 439,58103 | 440 |

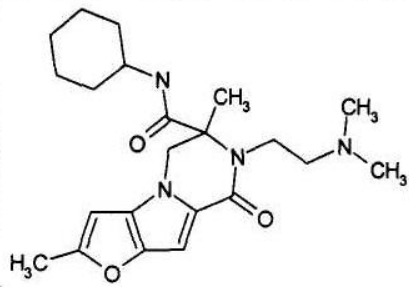
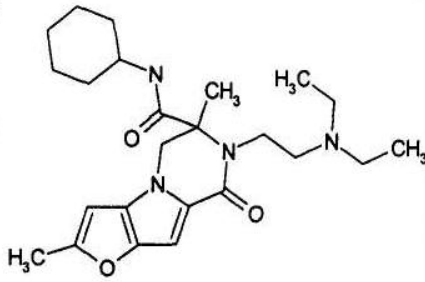
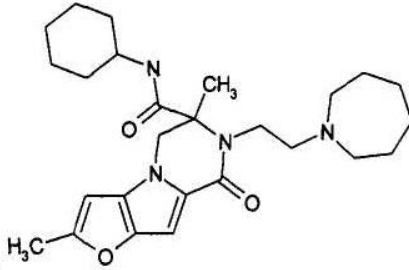
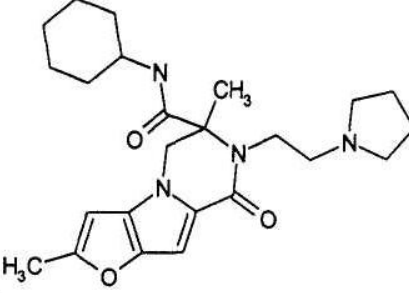
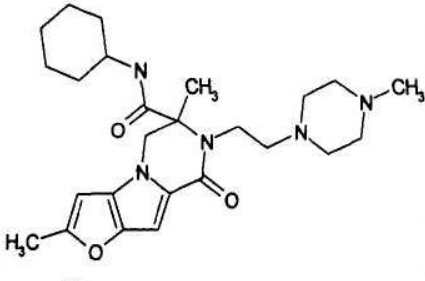
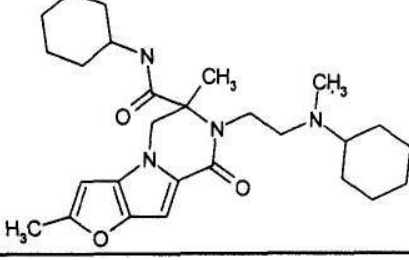
| | | | |
|-----|---|-----------|-----|
| 193 |  | 451,5457 | 452 |
| 194 |  | 477,60885 | 478 |
| 195 |  | 493,60825 | 494 |
| 196 |  | 477,60885 | 478 |
| 197 |  | 447,58236 | 448 |

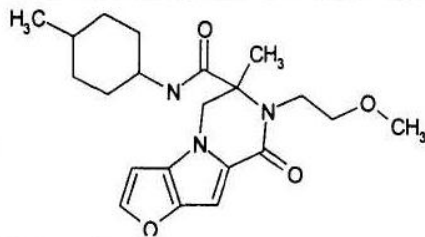
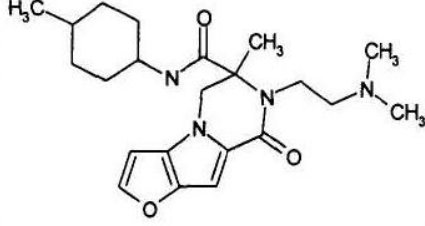
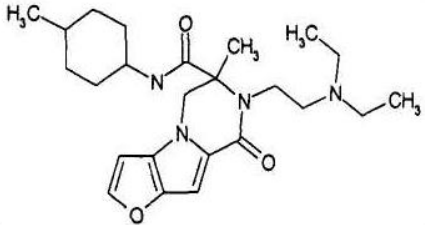
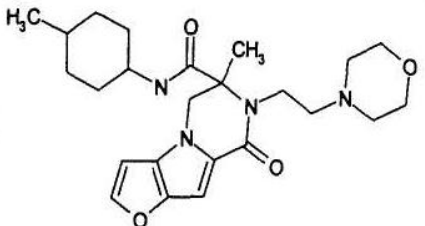
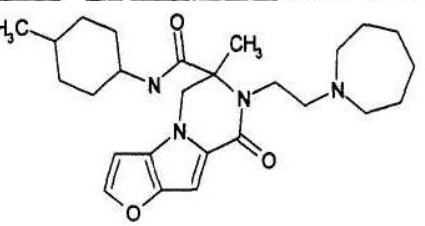
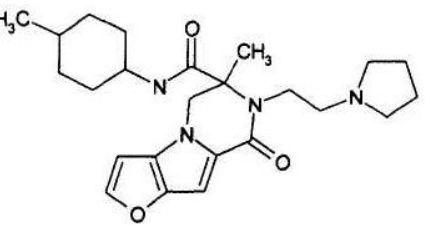
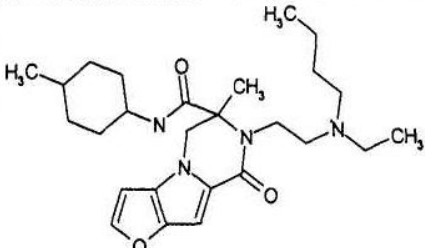
| | | | | |
|-----|---|-----------|-----|--|
| 198 |  | 491,63594 | 492 | |
| 199 |  | 491,63594 | 492 | |
| 200 |  | 451,5457 | 452 | |
| 201 |  | 434,54285 | 435 | |

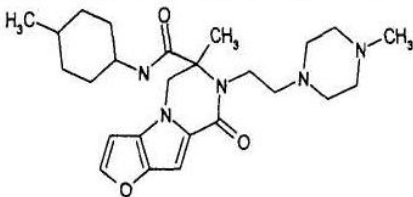
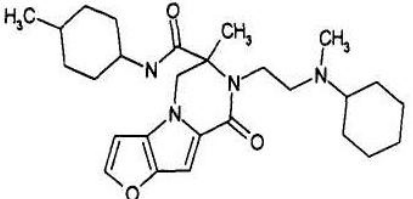
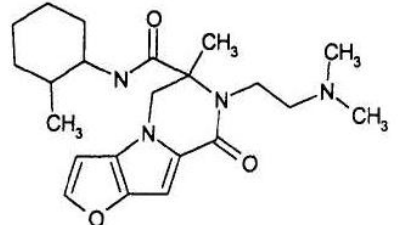
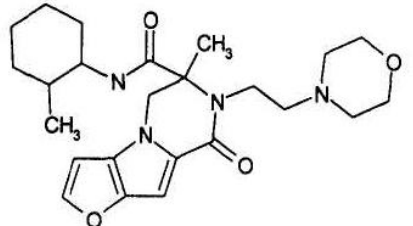
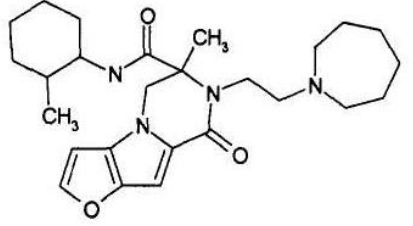
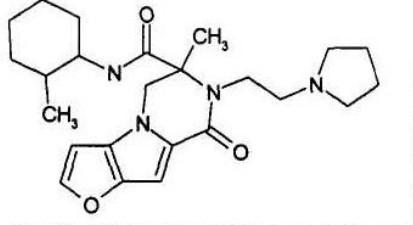
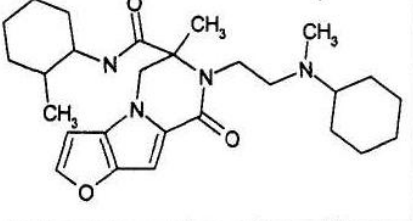
Таблиця 1.17(4)

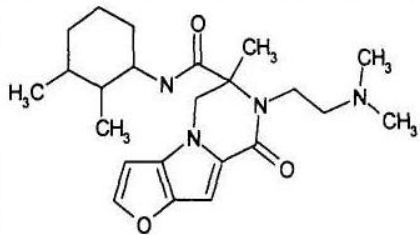
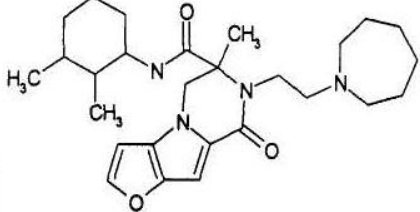
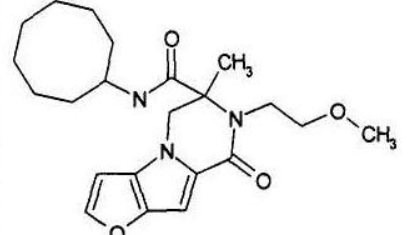
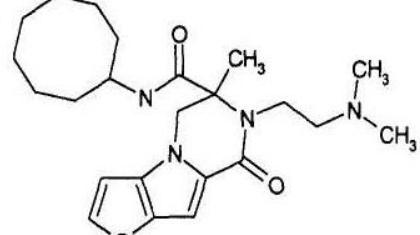
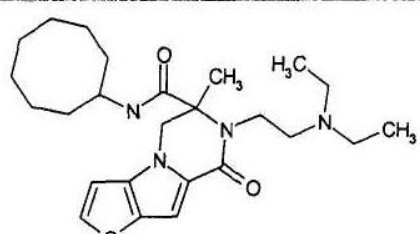
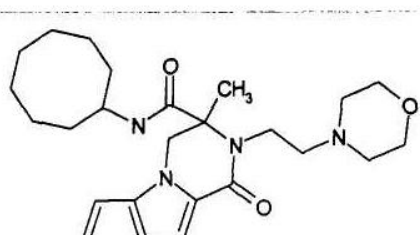
| | | | |
|---|---|----------|-----|
| 3 |  | 373,4559 | 374 |
| 4 |  | 386,4983 | 387 |
| 5 |  | 414,5524 | 415 |
| 6 |  | 428,5359 | 429 |
| 7 |  | 440,5907 | 441 |

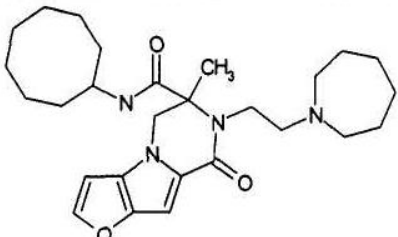
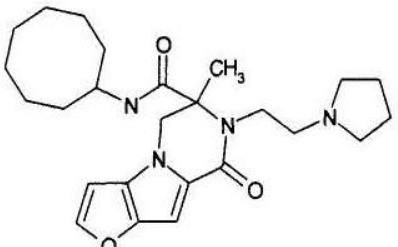
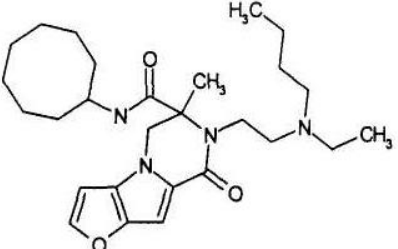
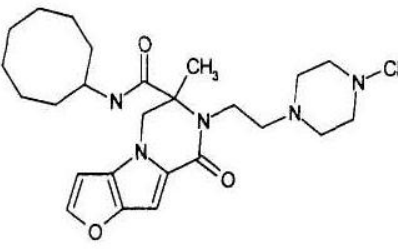
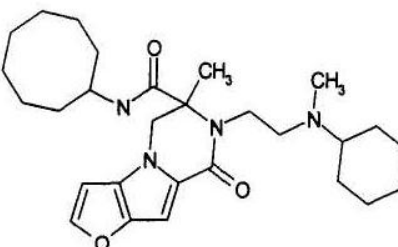
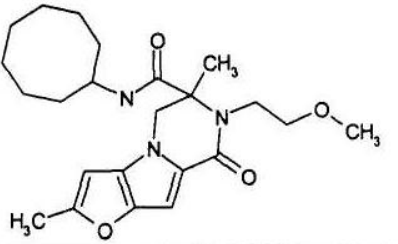
| | | | | |
|----|---|----------|-----|--|
| 8 |  | 412,5365 | 413 | |
| 9 |  | 442,6066 | 443 | |
| 10 |  | 441,5783 | 442 | |
| 11 |  | 454,6178 | 455 | |
| 12 |  | 387,483 | 388 | |

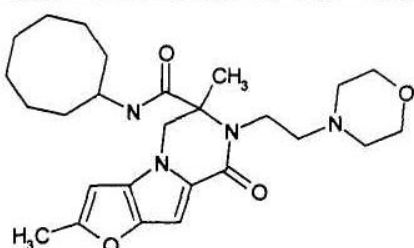
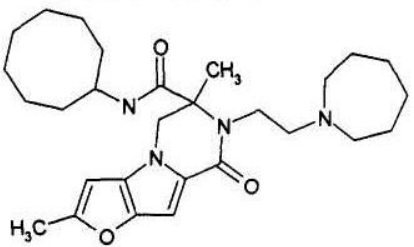
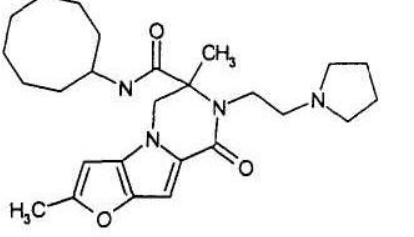
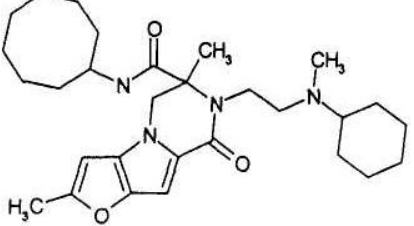
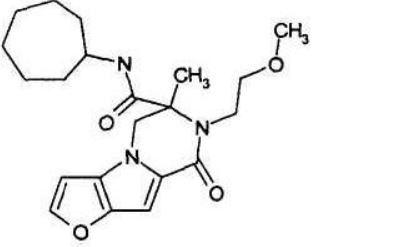
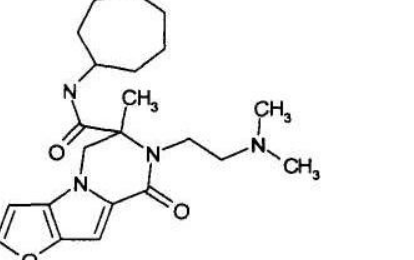
| | | | | |
|----|---|----------|-----|--|
| 13 |  | 400,5253 | 401 | |
| 14 |  | 428,5795 | 429 | |
| 15 |  | 454,6178 | 455 | |
| 16 |  | 426,5636 | 427 | |
| 17 |  | 455,6053 | 456 | |
| 18 |  | 468,6449 | 469 | |

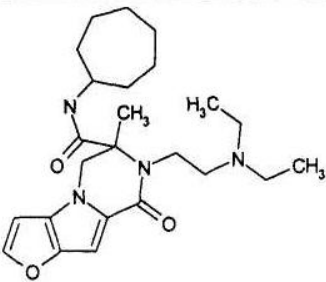
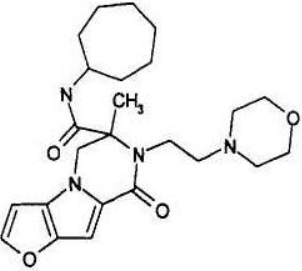
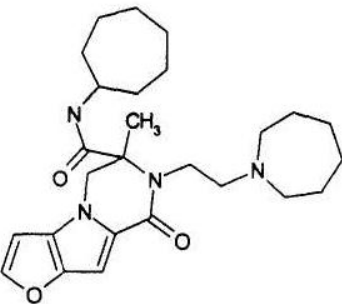
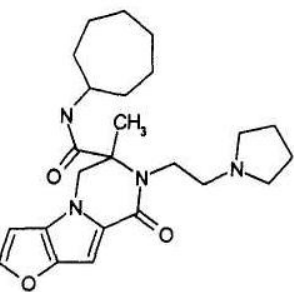
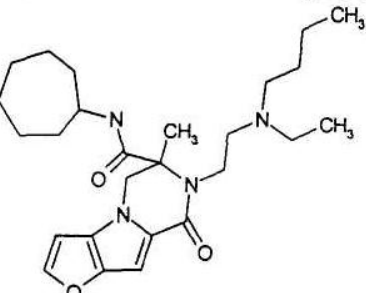
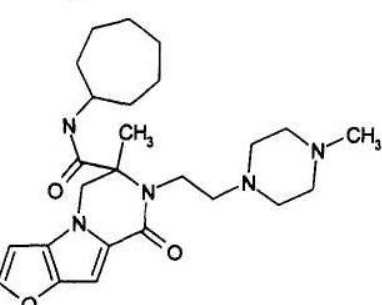
| | | | |
|----|---|----------|-----|
| 19 |  | 387,483 | 388 |
| 20 |  | 400,5253 | 401 |
| 21 |  | 428,5795 | 429 |
| 22 |  | 442,563 | 443 |
| 23 |  | 454,6178 | 455 |
| 24 |  | 426,5636 | 427 |
| 25 |  | 456,6337 | 457 |

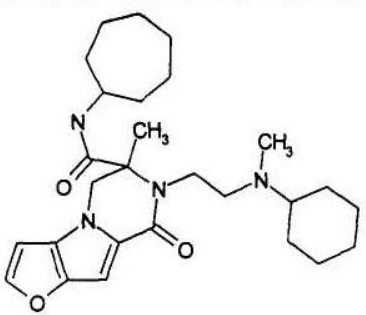
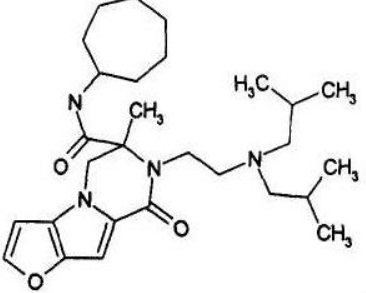
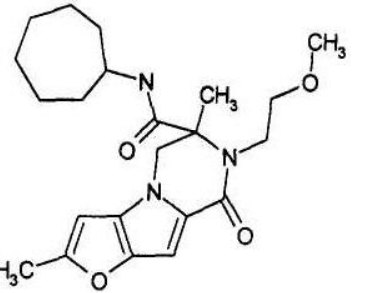
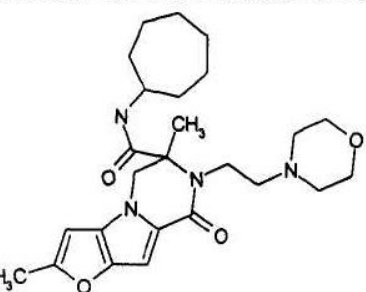
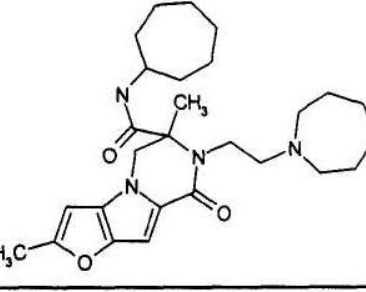
| | | | |
|----|---|----------|-----|
| 26 |  | 455,6053 | 456 |
| 27 |  | 468,6449 | 469 |
| 28 |  | 400,5253 | 401 |
| 29 |  | 442,563 | 443 |
| 30 |  | 454,6178 | 455 |
| 31 |  | 426,5636 | 427 |
| 32 |  | 468,6449 | 469 |

| | | | | |
|----|---|----------|-----|--|
| 33 |  | 414,5524 | 415 | |
| 34 |  | 468,6449 | 469 | |
| 35 |  | 401,5101 | 402 | |
| 36 |  | 414,5524 | 415 | |
| 37 |  | 442,6066 | 443 | |
| 38 |  | 456,5901 | 457 | |

| | | | |
|----|---|----------|-----|
| 39 |  | 468,6449 | 469 |
| 40 |  | 440,5907 | 441 |
| 41 |  | 470,6608 | 471 |
| 42 |  | 469,6324 | 470 |
| 43 |  | 482,6719 | 483 |
| 44 |  | 415,5372 | 416 |

| | | | |
|----|---|----------|-----|
| 45 |  | 470,6172 | 471 |
| 46 |  | 482,6719 | 483 |
| 47 |  | 454,6178 | 455 |
| 48 |  | 496,699 | 497 |
| 49 |  | 387,483 | 388 |
| 50 |  | 400,5253 | 401 |

| | | | |
|----|---|----------|-----|
| 51 |  | 428,5795 | 429 |
| 52 |  | 442,563 | 443 |
| 53 |  | 454,6178 | 455 |
| 54 |  | 426,5636 | 427 |
| 55 |  | 456,6337 | 457 |
| 56 |  | 455,6053 | 456 |

| | | | | |
|----|---|----------|-----|--|
| 57 |  | 468,6449 | 469 | |
| 58 |  | 484,6879 | 485 | |
| 59 |  | 401,5101 | 402 | |
| 60 |  | 456,5901 | 457 | |
| 61 |  | 468,6449 | 469 | |

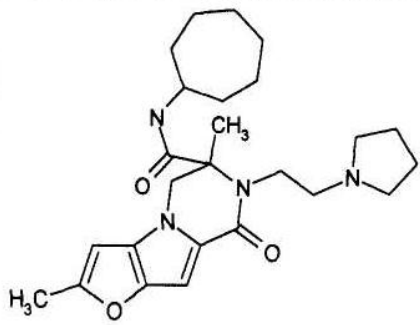
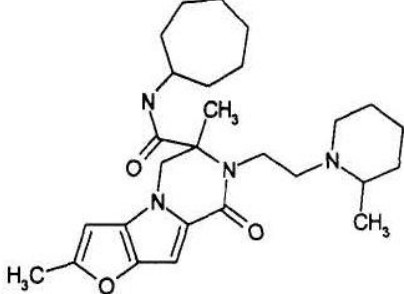
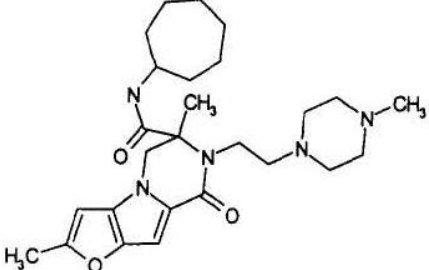
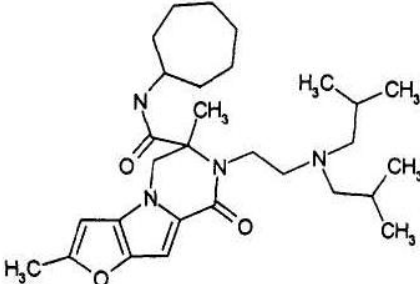
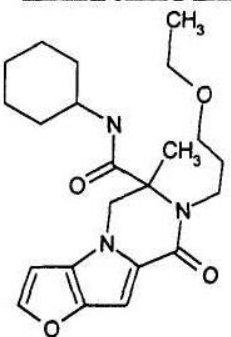
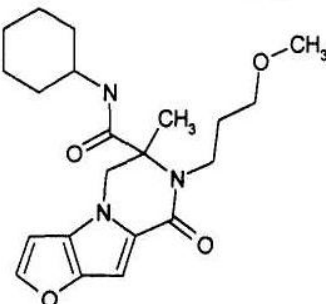
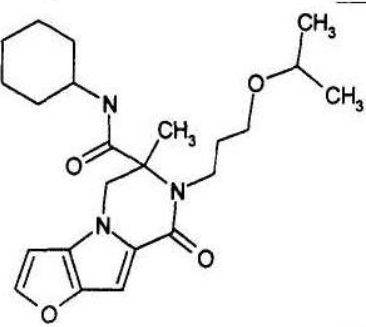
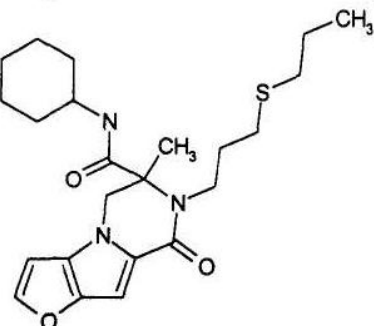
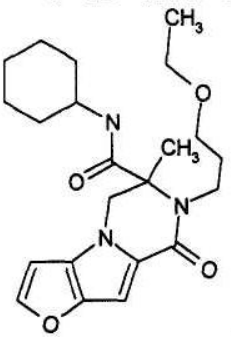
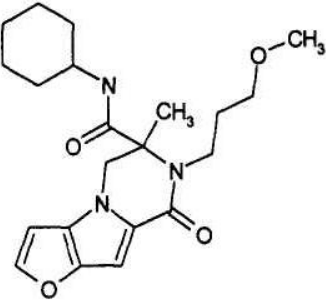
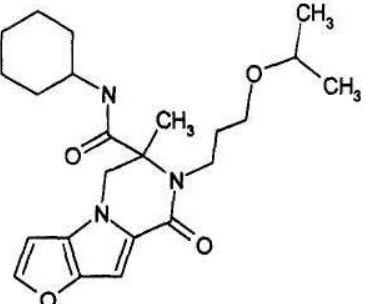
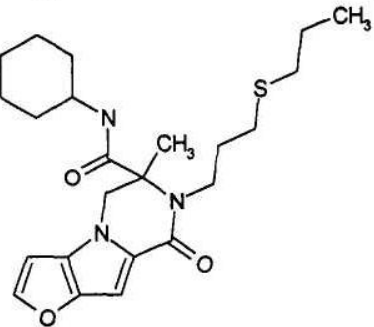
| | | | | |
|----|---|----------|-----|--|
| 62 |  | 440,5907 | 441 | |
| 63 |  | 468,6449 | 469 | |
| 64 |  | 469,6324 | 470 | |
| 65 |  | 498,715 | 499 | |

Таблица 1.17(5)

| № п.п. | Формула | Мол.масса | Мас - спектр, m/z (M+1) | ПМР спектр |
|--------|---|-----------|----------------------------------|------------|
| 1 |  | 401,51007 | 402 | |
| 2 |  | 387,48298 | 388 | |
| 3 |  | 415,53716 | 416 | |
| 4 |  | 431,60176 | 432 | |

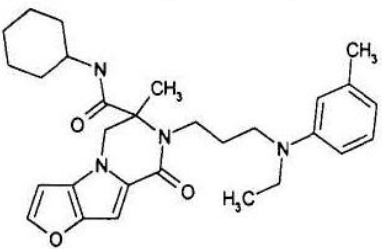
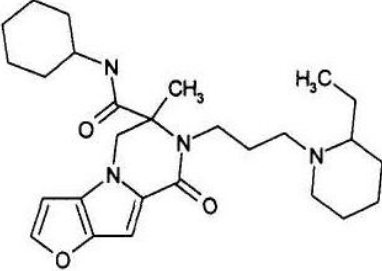

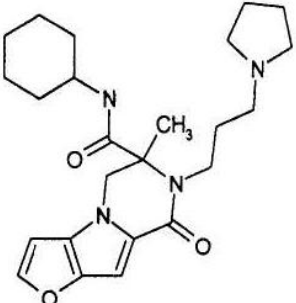
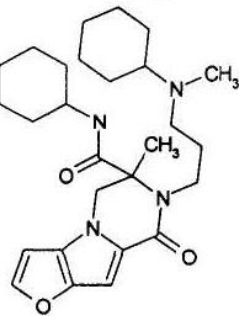
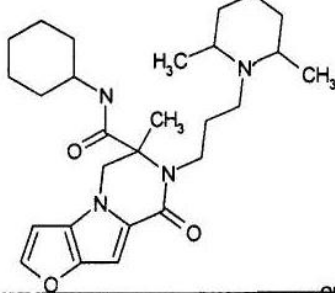
| Таблица 1.17(5) | | | | |
|-----------------|---|-----------|-----------------------|------------|
| № п.п. | Формула | Мол.маса | Мас-спектр, m/z (M+1) | ПМР спектр |
| 1 |  | 401,51007 | 402 | |
| 2 |  | 387,48298 | 388 | |
| 3 |  | 415,53716 | 416 | |
| 4 |  | 431,60176 | 432 | |

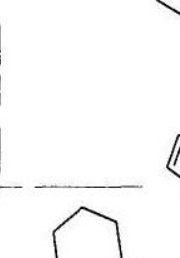
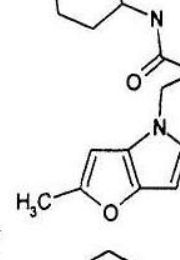
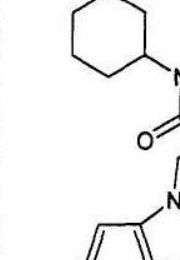
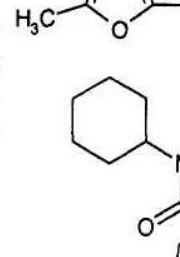
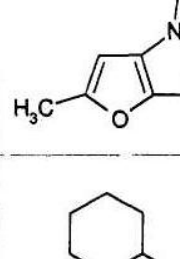
1011

84447

1012

| | | | | |
|---|--|-----------|-----|---|
| 5 | | 428,57952 | 429 | 0.99 (17; 6H; t.; 6.2 Hz), 1.03 - 1.82 (8, 9, 10, 11, 12, 14; 12H; m.), 1.57 (4; 3H, s.), 2.45 (15, 16; 6H; m.), 3.18 (7; 1 H; b.m.), 3.52 (13; 2H; m.), 3.96 + 4.60 (3; 2H; AB; 12.3 Hz), 6.52 (2; 1H; b s.), 6.55 (5; 1H; s.), 7.15 (6; 1H; d.; 8.3 Hz),... |
| 6 | | 442,56298 | 443 | |
| 7 | | 455,60534 | 456 | |
| 8 | | 440,59067 | 441 | |
| 9 | | 476,62412 | 477 | |

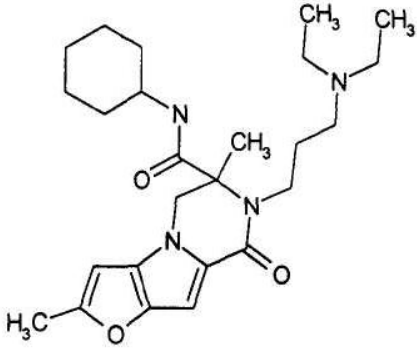
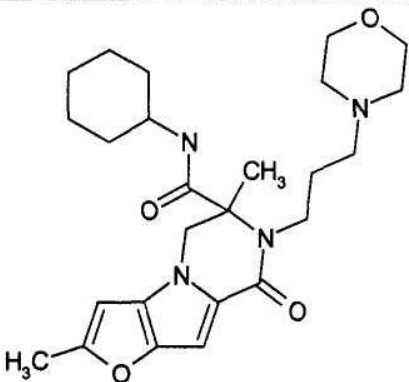
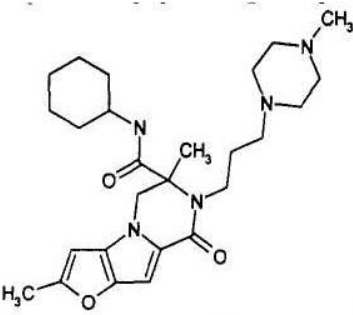
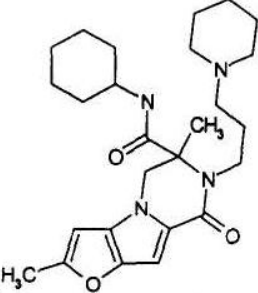
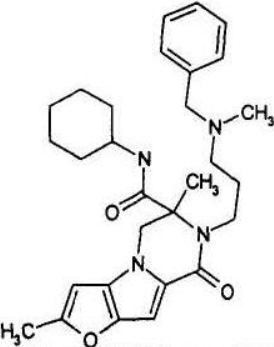
| | | | |
|----|---|-----------|-----|
| 10 |  | 490,65121 | 491 |
| 11 |  | 468,64485 | 469 |
| 12 |  | 454,61776 | 455 |
| 13 |  | 426,56358 | 427 |
| 14 |  | 468,64485 | 469 |
| 15 |  | 468,64485 | 469 |

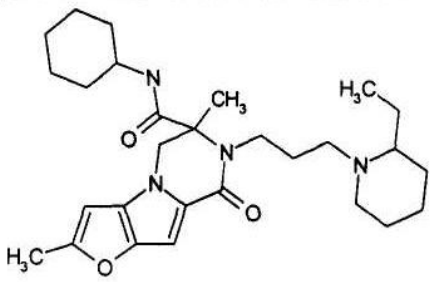
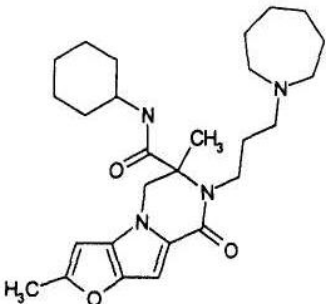
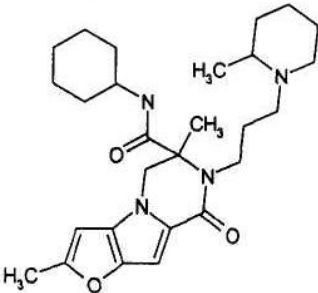
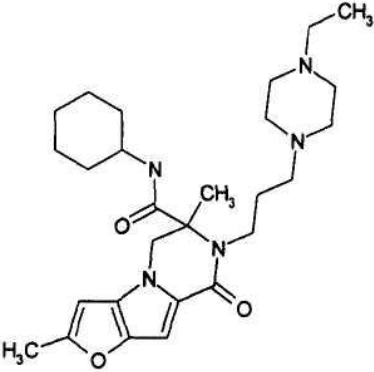
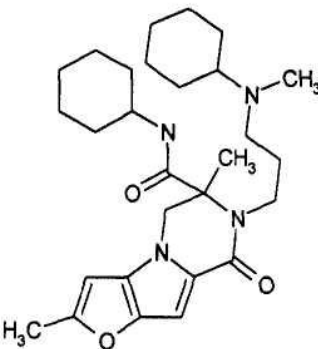
| | | | |
|----|---|-----------|-----|
| 16 |  | 483,65952 | 484 |
| 17 |  | 415,53716 | 416 |
| 18 |  | 401,51007 | 402 |
| 19 |  | 429,56425 | 430 |
| 20 |  | 445,62885 | 446 |

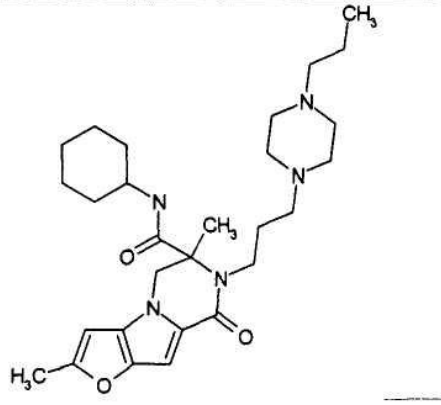
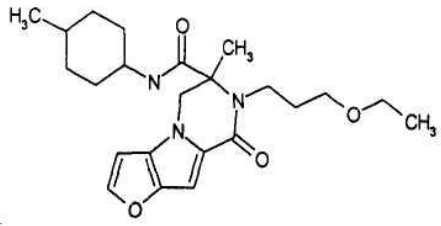
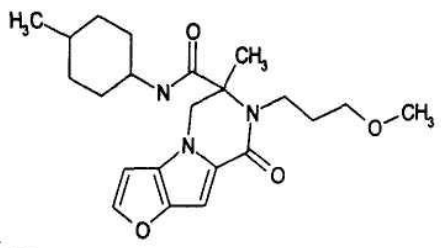
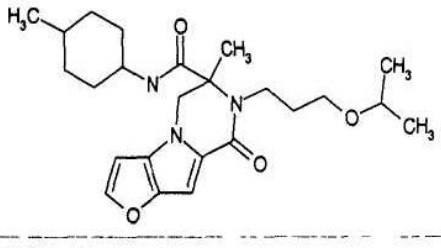
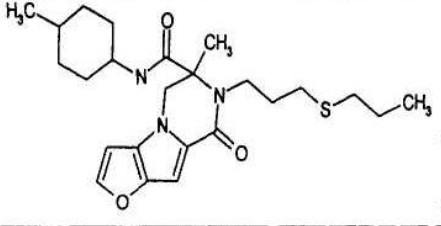
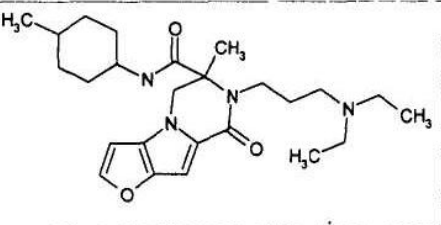
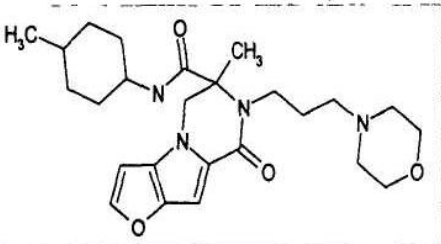
1017

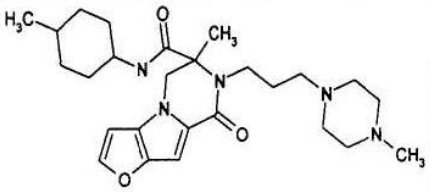
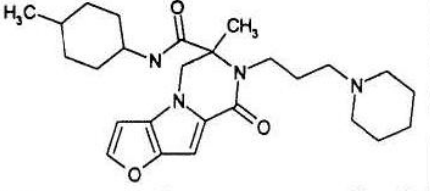
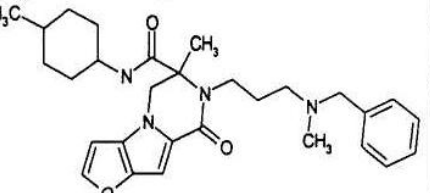
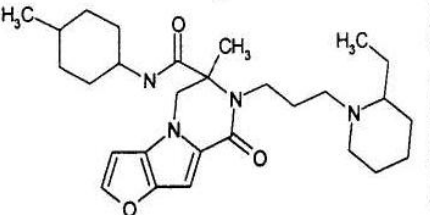
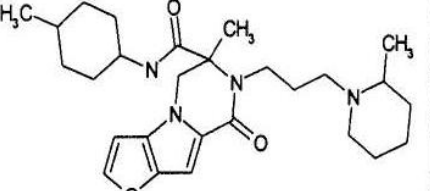
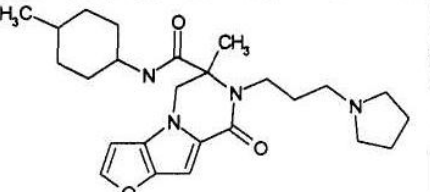
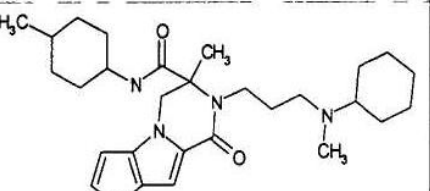
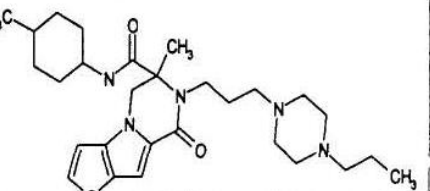
84447

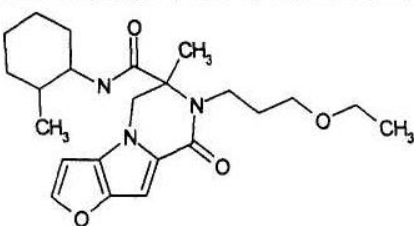
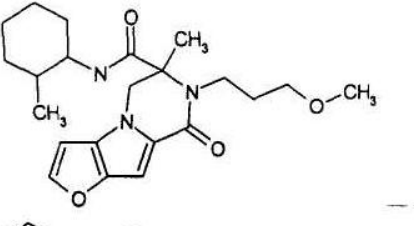
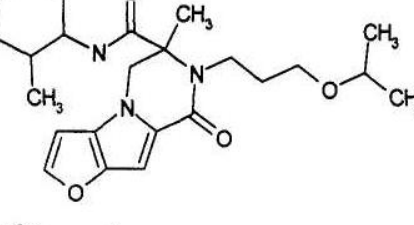
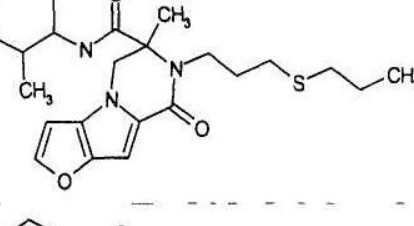
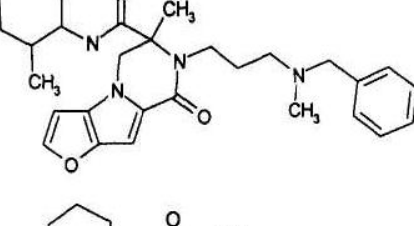
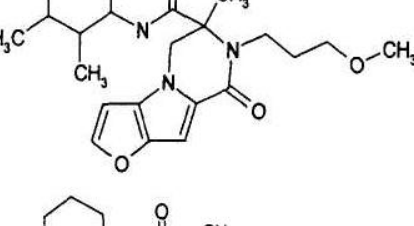
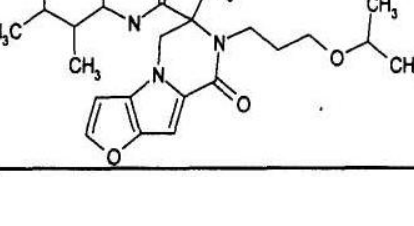
1018

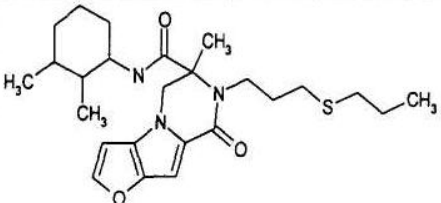
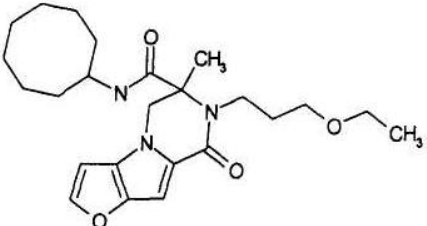
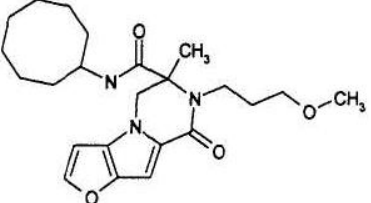
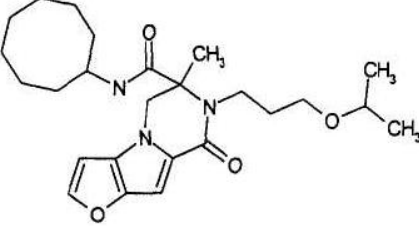
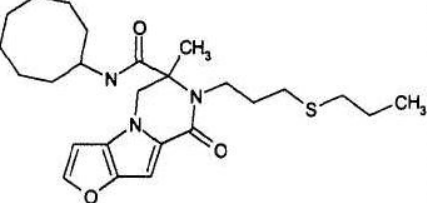
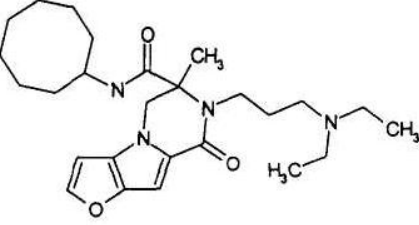
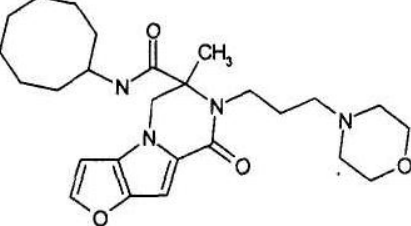
| | | | | |
|----|---|-----------|-----|--|
| 21 |  | 442,60661 | 443 | |
| 22 |  | 456,59007 | 457 | |
| 23 |  | 469,63243 | 470 | |
| 24 |  | 454,61776 | 455 | |
| 25 |  | 490,65121 | 491 | |

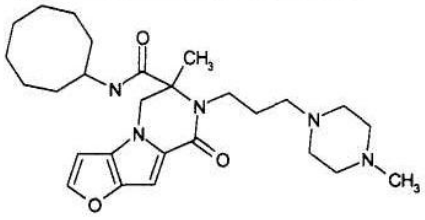
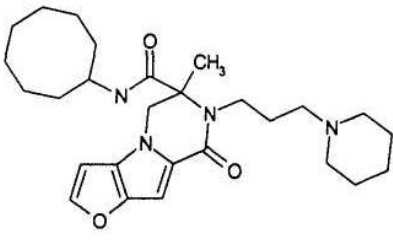
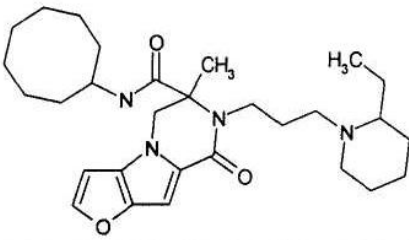
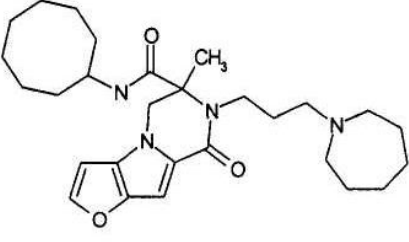
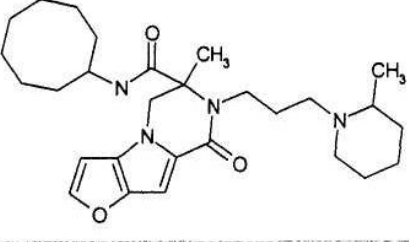

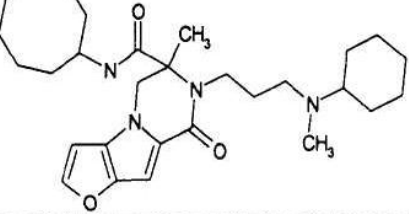
| | | | |
|----|---|-----------|-----|
| 26 |  | 482,67194 | 483 |
| 27 |  | 468,64485 | 469 |
| 28 |  | 468,64485 | 469 |
| 29 |  | 483,65952 | 484 |
| 30 |  | 482,67194 | 483 |

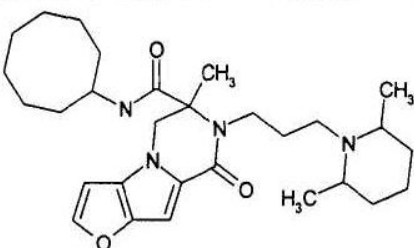
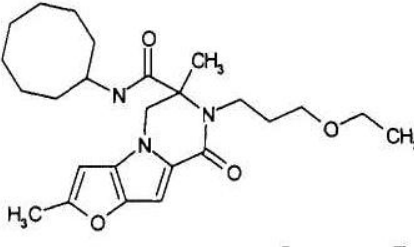
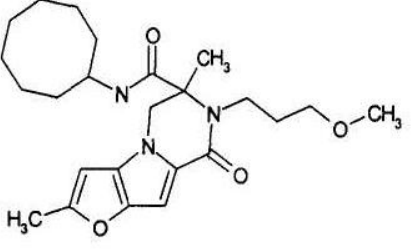
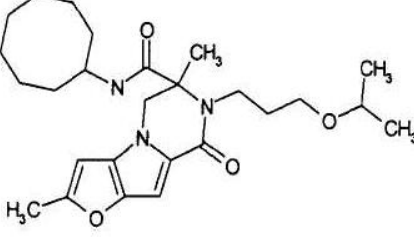
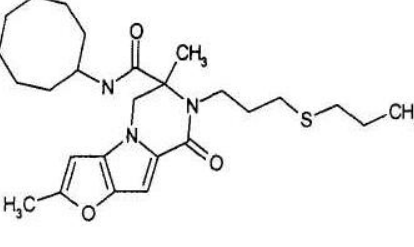
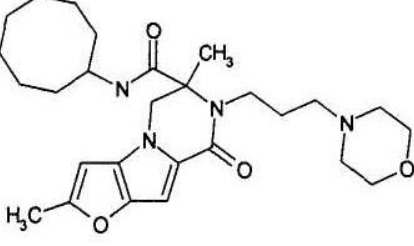
| | | | | |
|----|---|-----------|-----|--|
| 31 |  | 497,68661 | 498 | |
| 32 |  | 415,53716 | 416 | |
| 33 |  | 401,51007 | 402 | |
| 34 |  | 429,56425 | 430 | |
| 35 |  | 445,62885 | 446 | |
| 36 |  | 442,60661 | 443 | |
| 37 |  | 456,59007 | 457 | |

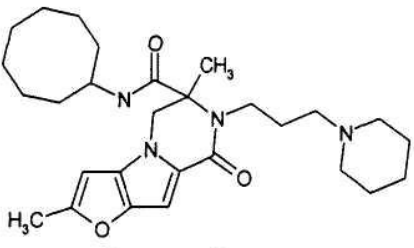
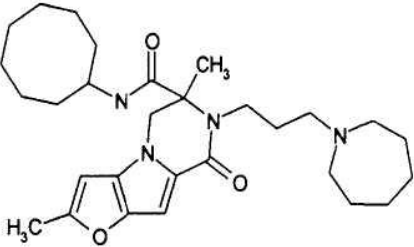
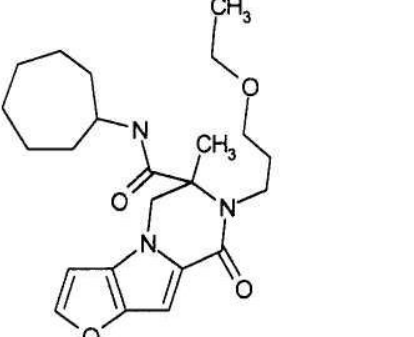
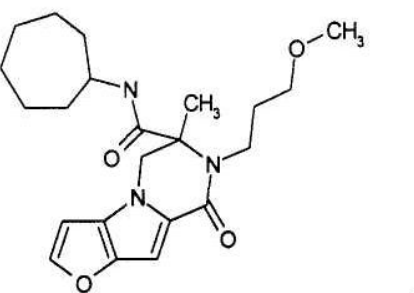
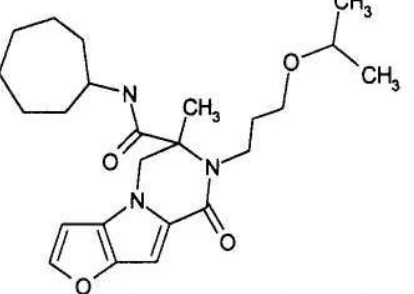
| | | | |
|----|---|-----------|-----|
| 38 |  | 469,63243 | 470 |
| 39 |  | 454,61776 | 455 |
| 40 |  | 490,65121 | 491 |
| 41 |  | 482,67194 | 483 |
| 42 |  | 468,64485 | 469 |
| 43 |  | 440,59067 | 441 |
| 44 |  | 482,67194 | 483 |
| 45 |  | 497,68661 | 498 |

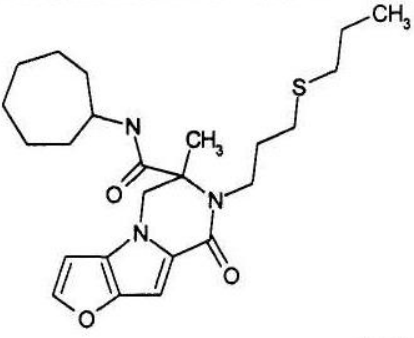
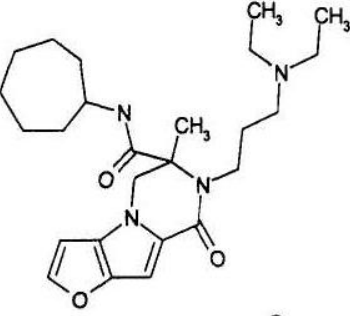
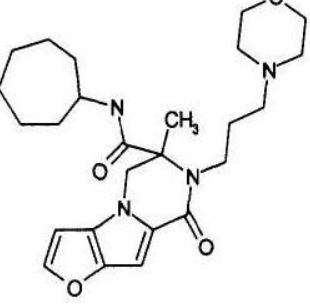

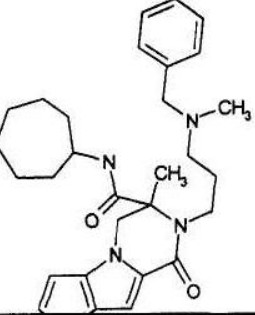
| | | | |
|----|---|-----------|-----|
| 46 |  | 415,53716 | 416 |
| 47 |  | 401,51007 | 402 |
| 48 |  | 429,56425 | 430 |
| 49 |  | 445,62885 | 446 |
| 50 |  | 490,65121 | 491 |
| 51 |  | 415,53716 | 416 |
| 52 |  | 443,59134 | 444 |

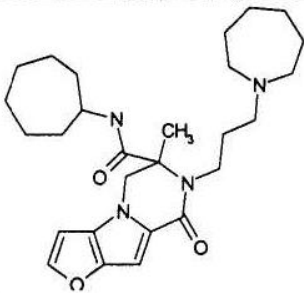

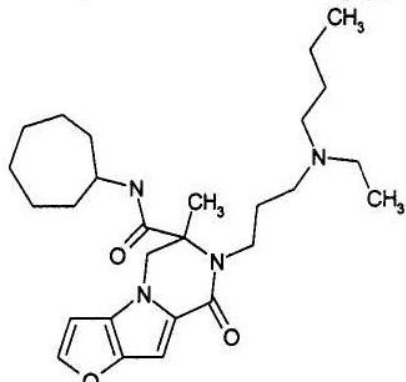
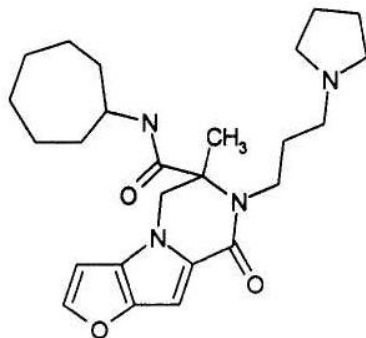
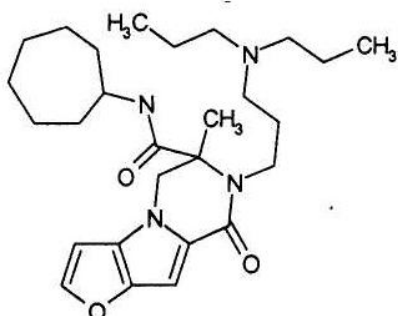
| | | | | |
|----|---|-----------|-----|--|
| 53 |  | 459,65594 | 460 | |
| 54 |  | 429,56425 | 430 | |
| 55 |  | 415,53716 | 416 | |
| 56 |  | 443,59134 | 444 | |
| 57 |  | 459,65594 | 460 | |
| 58 |  | 456,6337 | 457 | |
| 59 |  | 470,61716 | 471 | |

| | | | |
|----|---|-----------|-----|
| 60 |  | 483,65952 | 484 |
| 61 |  | 468,64485 | 469 |
| 62 |  | 496,69903 | 497 |
| 63 |  | 482,67194 | 483 |
| 64 |  | 482,67194 | 483 |
| 65 |  | 454,61776 | 455 |
| 66 |  | 496,69903 | 497 |

| | | | |
|----|---|-----------|-----|
| 67 |  | 496,69903 | 497 |
| 68 |  | 443,59134 | 444 |
| 69 |  | 429,56425 | 430 |
| 70 |  | 457,61843 | 458 |
| 71 |  | 473,68303 | 474 |
| 72 |  | 484,64425 | 485 |

| | | | |
|----|---|-----------|-----|
| 73 |  | 482,67194 | 483 |
| 74 |  | 496,69903 | 497 |
| 75 |  | 415,53716 | 416 |
| 76 |  | 401,51007 | 402 |
| 77 |  | 429,56425 | 430 |

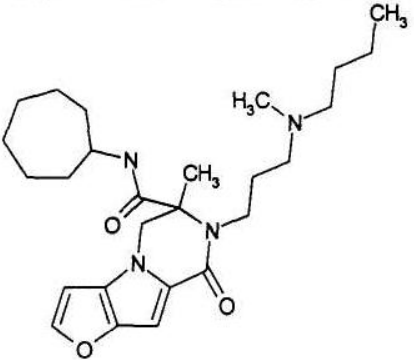
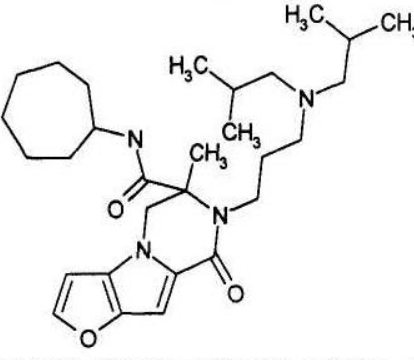
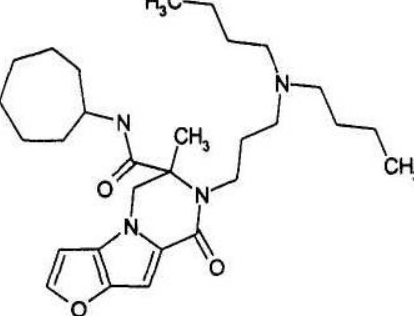
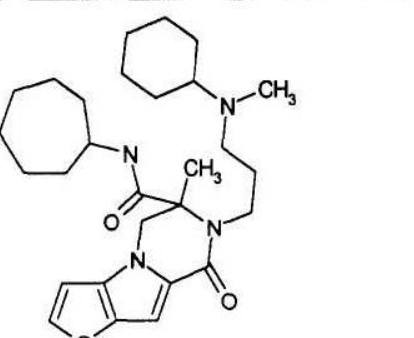
| | | | | |
|----|--|-----------|-----|--|
| 78 |  <chem>CCCCSCC12C(=O)N(C1)c3cc4occc4n3C(=O)N2C</chem> | 445,62885 | 446 | |
| 79 |  <chem>CCN(CC)CC12C(=O)N(C1)c3cc4occc4n3C(=O)N2C</chem> | 442,60661 | 443 | |
| 80 |  <chem>C1CCN(C1)CC12C(=O)N(C1)c3cc4occc4n3C(=O)N2C</chem> | 456,59007 | 457 | |
| 81 |  <chem>C1CCN(C1)CC12C(=O)N(C1)c3cc4occc4n3C(=O)N2C</chem> | 454,61776 | 455 | |
| 82 |  <chem>CCN(Cc1ccccc1)CC12C(=O)N(C1)c3cc4occc4n3C(=O)N2C</chem> | 490,65121 | 491 | |

| | | | | |
|----|---|-----------|-----|--|
| 83 |  | 468,64485 | 469 | |
| 84 |  | 468,64485 | 469 | |
| 85 |  | 470,66079 | 471 | |
| 86 |  | 440,59067 | 441 | |
| 87 |  | 470,66079 | 471 | |

1039

84447

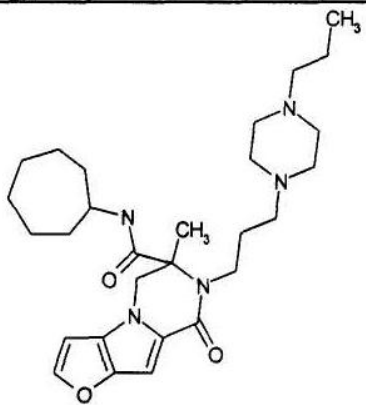
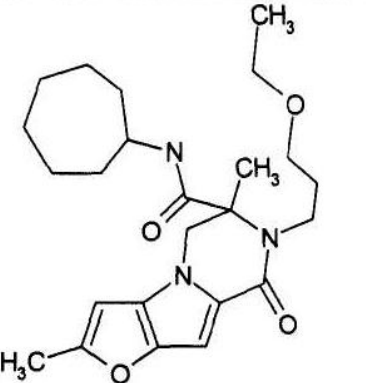
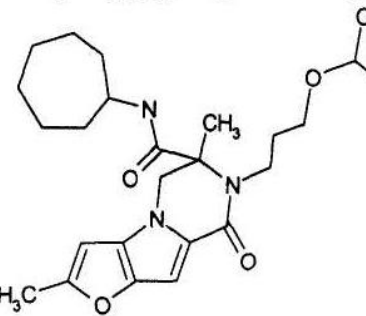
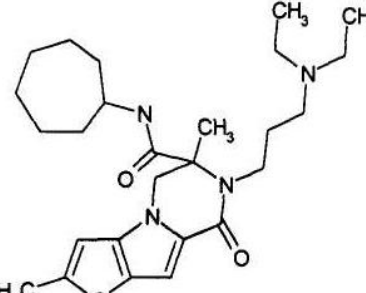
1040

| | | | | |
|----|---|-----------|-----|--|
| 88 |  | 456,6337 | 457 | |
| 89 |  | 498,71497 | 499 | |
| 90 |  | 498,71497 | 499 | |
| 91 |  | 482,67194 | 483 | |

1041

84447

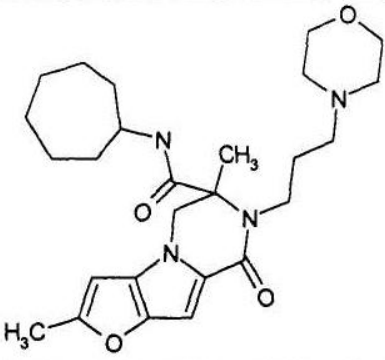
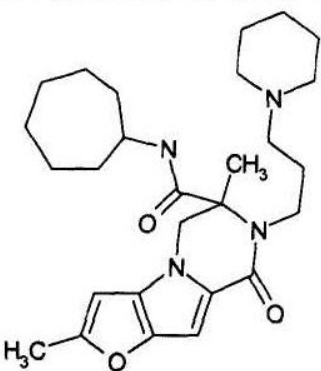
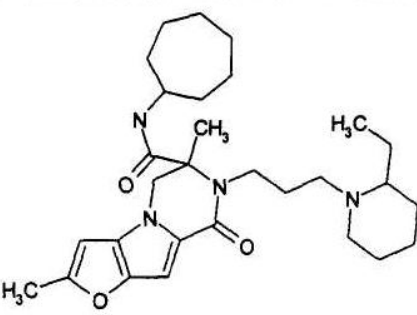
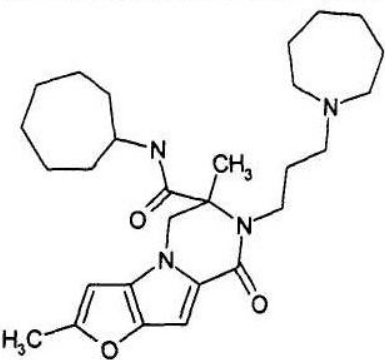
1042

| | | | |
|----|---|-----------|-----|
| 92 |  | 497,68661 | 498 |
| 93 |  | 429,56425 | 430 |
| 94 |  | 443,59134 | 444 |
| 95 |  | 456,6337 | 457 |

1043

84447

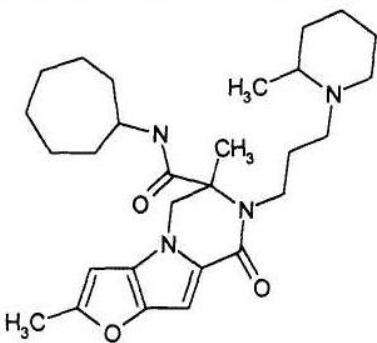
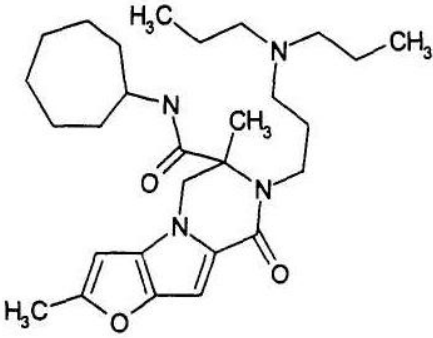
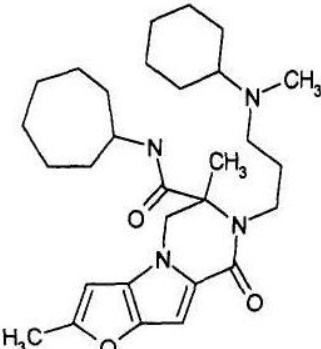
1044

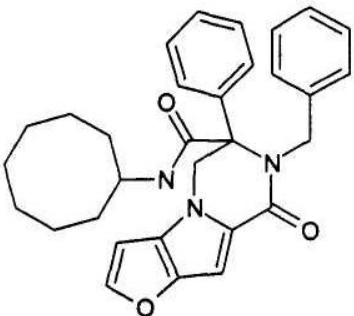
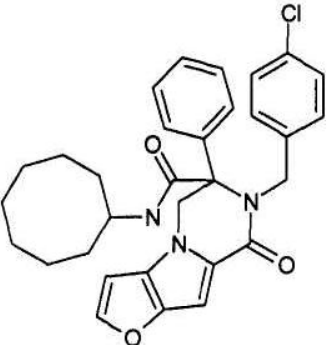
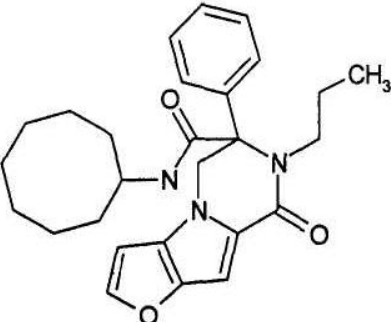
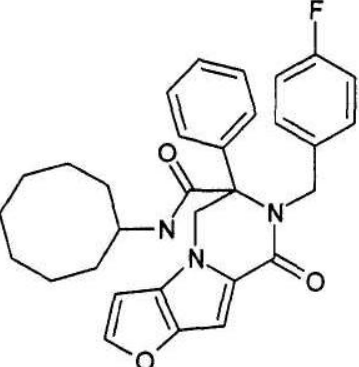
| | | | | |
|----|---|-----------|-----|--|
| 96 |  | 470,61716 | 471 | |
| 97 |  | 468,64485 | 469 | |
| 98 |  | 496,69903 | 497 | |
| 99 |  | 482,67194 | 483 | |

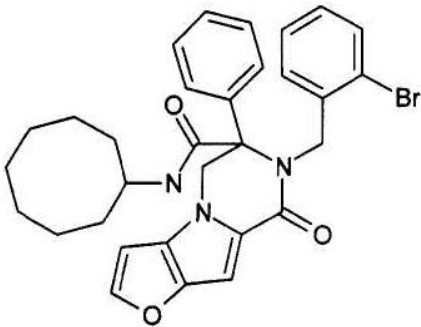
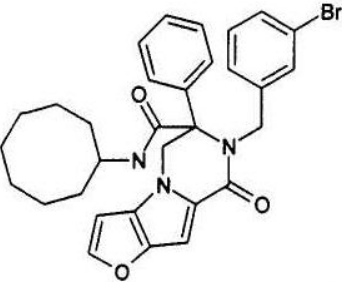
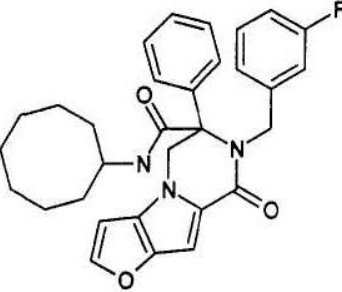
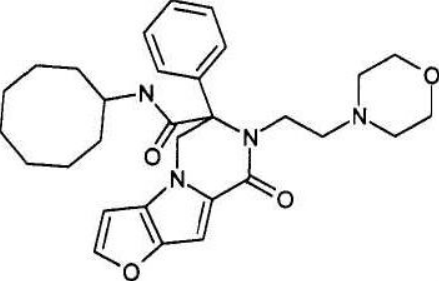
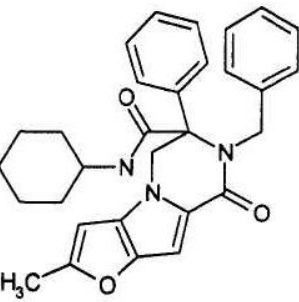
1045

84447

1046

| | | | | |
|-----|--|-----------|-----|--|
| 100 |  | 482,67194 | 483 | |
| 101 |  | 484,68788 | 485 | |
| 102 |  | 496,69903 | 497 | |

| Таблица 1.17(6) | | | |
|-----------------|---|-----------|------------------------|
| № п.п. | Формула | Мол.масса | Мас -спектр, m/z (M+1) |
| 1 |  | 495,62696 | 496 |
| 2 |  | 530,07199 | 531 |
| 3 |  | 447,58236 | 448 |
| 4 |  | 513,61739 | 514 |

| | | | |
|---|---|-----------|-----|
| 5 |  | 574,52299 | 575 |
| 6 |  | 574,52299 | 575 |
| 7 |  | 513,61739 | 514 |
| 8 |  | 518,66176 | 519 |
| 9 |  | 481,59987 | 482 |

1051

84447

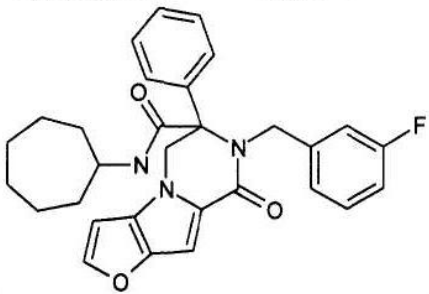
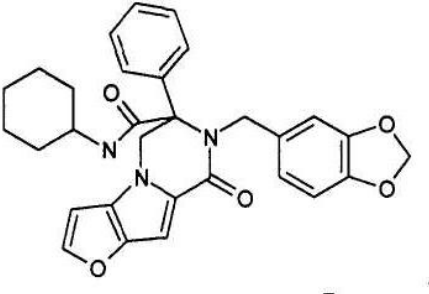
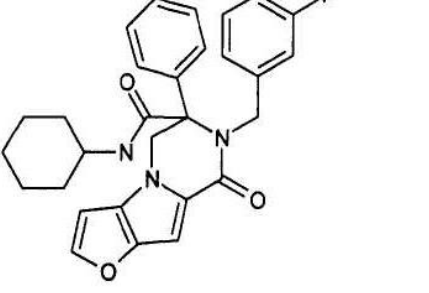
1052

| | | | |
|----|--|-----------|-----|
| 10 | | 525,65345 | 526 |
| 11 | | 516,0449 | 517 |
| 12 | | 433,55527 | 434 |
| 13 | | 499,5903 | 500 |
| 14 | | 560,4959 | 561 |

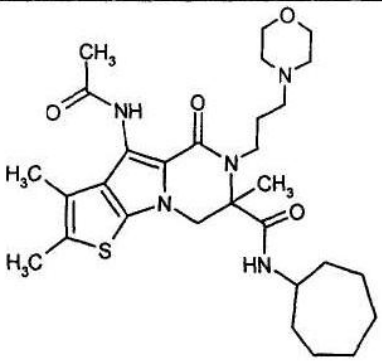
1053

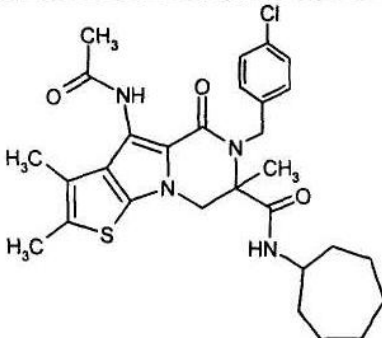
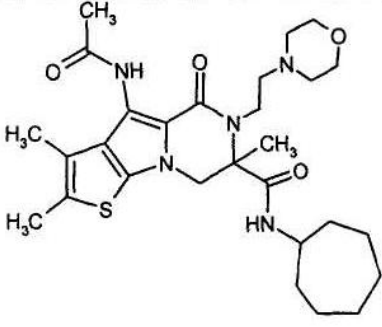
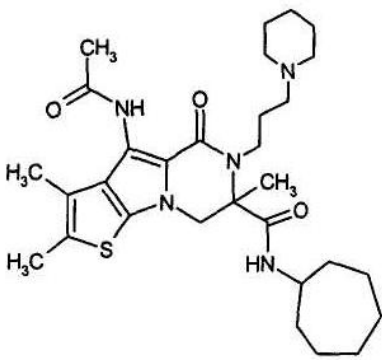
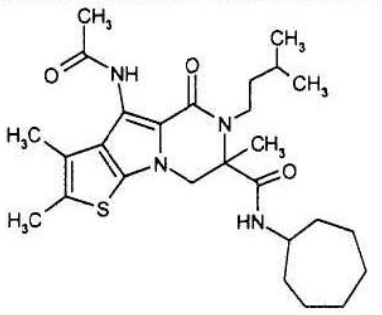
84447

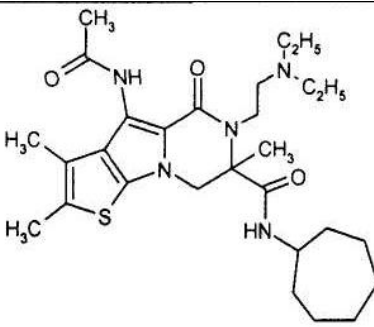
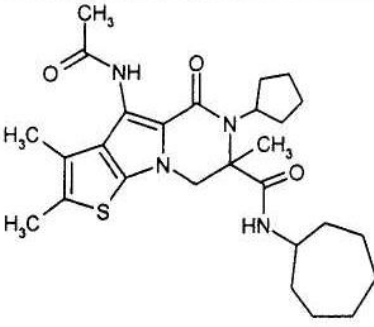
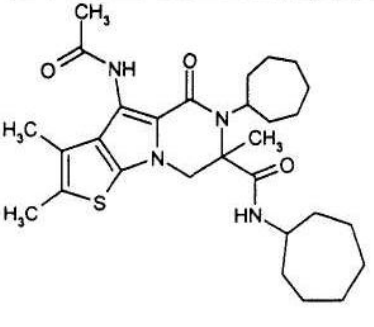
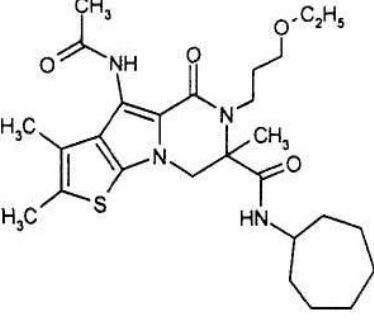
1054

| | | | |
|----|--|-----------|-----|
| 15 |  | 499,5903 | 500 |
| 16 |  | 511,58273 | 512 |
| 17 |  | 485,56321 | 486 |


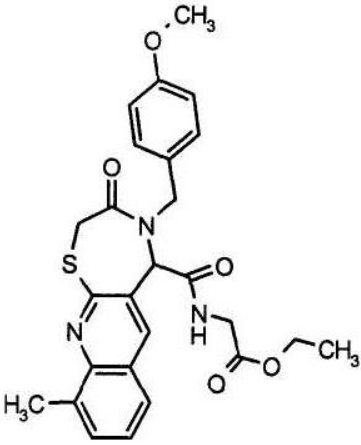
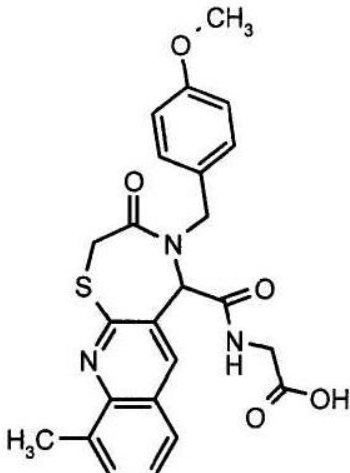
Таблиця 1.18.

| № п.п. | Формула | Спектральні дані |
|-----------|---|---|
| 1 |  | ¹ H-NMR (400 MHz, DMSO- <i>d</i> ₆ +CCl ₄): δ 9.0 (s, 1H), 7.3 (d, <i>J</i> = 6.4 Hz, 1H), 4.48 (d, <i>J</i> = 5.4 Hz, 1H), 3.81 (d, <i>J</i> = 5.4 Hz, 1H), 3.7-3.4 (m, 6H), 3.22-3.1 (m, 1H), 2.4-2.2 (m, 5H), 2.3 (s, 3H), 2.12 (s, 3H), 2.01 (s, 3H), 1.8-1.3 (m, 15H), 1.5 (s, 3H); ¹³ C-NMR (400 MHz, DMSO- <i>d</i> ₆): δ 169.0, 159.6, 130.8, 127.8, 126.1, 123.7, 119.0, 117.8, 66.1, 64.3, 55.9, 53.2, 51.9, 50.5, 34.0, 33.9, 27.6, 27.5, 26.5, 23.7, 22.8, 20.5, 13.4, 11.7; HRMS (<i>m/z</i>): [M] ⁺ calcd for C ₂₉ H ₄₃ N ₅ O ₄ S, 557.7612; found, 557.7608. |



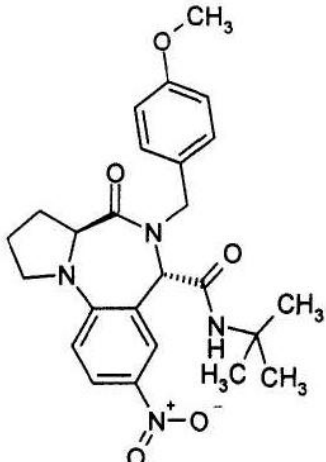
| | | |
|---|---|---|
| 2 |  | ¹ H-NMR (400 MHz, DMSO- <i>d</i> ₆ +CCl ₄): δ 9.12 (s, 1H), 7.26-7.1 (m, 5H), 5.12 (d, <i>J</i> = 5.6 Hz, 1H), 4.50 (d, <i>J</i> = 5.6 Hz, 1H), 4.15 (d, <i>J</i> = 5.4 Hz, 1H), 3.93 (d, <i>J</i> = 5.4 Hz, 1H), 3.61-3.58 (m, 1H), 2.38 (s, 3H), 2.13 (s, 3H), 2.0 (s, 3H), 1.76-1.27 (m, 12H), 1.47 (s, 3H); ¹³ C-NMR (400 MHz, DMSO- <i>d</i> ₆): δ 169.0, 160.1, 139.5, 131.3, 130.8, 128.5, 128.0, 126.3, 123.8, 118.8, 118.3, 64.7, 51.9, 50.5, 45.0, 34.06, 33.9, 27.7, 27.6, 23.7, 23.6, 22.8, 20.8, 13.5, 11.8; HRMS (<i>m/z</i>): [<i>M</i>] ⁺ calcd for C ₂₉ H ₃₅ ClN ₄ O ₃ S, 555.1443; found, 555.1437. |
| 3 |  | ¹ H-NMR (400 MHz, DMSO- <i>d</i> ₆ +CCl ₄): δ 9.1 (s, 1H), 7.38 (br s, 1H), 4.49 (d, <i>J</i> = 5.6 Hz, 1H), 3.83 (d, <i>J</i> = 5.6 Hz, 1H), 3.62-3.34 (m, 8H), 2.3 (s, 3H), 2.11 (s, 3H), 2.01 (s, 3H), 1.63-1.28 (m, 12H), 1.51 (s, 3H); ¹³ C-NMR (400 MHz, DMSO- <i>d</i> ₆): δ 169.1, 159.6, 130.9, 127.8, 126.1, 123.7, 119.0, 117.9, 66.1, 64.2, 57.7, 53.6, 51.9, 50.6, 34.0, 27.5, 23.8, 22.8, 20.4, 13.5, 11.7; HRMS (<i>m/z</i>): [<i>M</i>] ⁺ calcd for C ₂₈ H ₄₁ N ₅ O ₄ S, 543.7341; found, 543.73471. |
| 4 |  | ¹ H-NMR (400 MHz, DMSO- <i>d</i> ₆ +CCl ₄): δ 9.0 (s, 1H), 7.3 (d, <i>J</i> = 6.2 Hz, 1H), 4.48 (d, <i>J</i> = 5.4 Hz, 1H), 3.82 (d, <i>J</i> = 5.4 Hz, 1H), 3.71-3.6 (m, 1H), 3.55-3.42 (m, 1H), 3.22-3.1 (m, 1H), 2.4-1.9 (m, 6H), 2.31 (s, 3H), 2.13 (s, 3H), 2.04 (s, 3H), 1.91-1.33 (m, 20H), 1.56 (s, 3H); ¹³ C-NMR (400 MHz, DMSO- <i>d</i> ₆): δ 169.0, 159.7, 130.9, 127.8, 126.1, 123.7, 119.0, 117.8, 64.3, 55.9, 53.7, 51.9, 50.6, 34.0, 33.9, 27.6, 26.6, 25.3, 25.2, 23.7, 22.8, 20.5, 13.5, 11.8; HRMS (<i>m/z</i>): [<i>M</i>] ⁺ calcd for C ₃₀ H ₄₅ N ₅ O ₃ S, 555.7889; found, 555.7882. |
| 5 |  | ¹ H-NMR (400 MHz, DMSO- <i>d</i> ₆ +CCl ₄): δ 9.04 (s, 1H), 7.31 (d, <i>J</i> = 4.6 Hz, 1H), 4.49 (d, <i>J</i> = 5.6 Hz, 1H), 3.84 (d, <i>J</i> = 5.6 Hz, 1H), 3.75-3.6 (m, 1H), 3.55-3.44 (m, 1H), 3.23-3.1 (m, 1H), 2.3 (s, 3H), 2.12 (s, 3H), 2.02 (s, 3H), 1.71-1.32 (m, 15H), 1.55 (s, 3H), 1.00 (s, 6H); ¹³ C-NMR (400 MHz, DMSO- <i>d</i> ₆): δ 169.0, 159.4, 130.8, 127.8, 126.0, 123.8, 119.0, 117.8, 64.3, 51.9, 50.5, 34.0, 33.9, 27.6, 27.6, 26.1, 23.7, 22.8, 22.5, 22.4, 20.4, 13.5, 11.8; HRMS (<i>m/z</i>): [<i>M</i>] ⁺ calcd for C ₂₇ H ₄₀ N ₄ O ₃ S, 500.7089; found, 500.7094. |

| | 1057 | 84447 | 1058 |
|---|---|---|------|
| 6 |  | ¹ H-NMR (400 MHz, DMSO- <i>d</i> ₆ +CCl ₄): δ 9.00 (s, 1H), 7.33 (d, <i>J</i> = 4.4 Hz, 1H), 4.50 (d, <i>J</i> = 5.6 Hz, 1H), 3.82 (d, <i>J</i> = 5.6 Hz, 1H), 3.71-3.52 (m, 2H), 3.24-3.16 (m, 1H), 2.61-2.48 (m, 7H), 2.31 (s, 3H), 2.12 (s, 3H), 2.00 (s, 3H), 1.73-1.34 (m, 12H), 1.53 (s, 3H), 1.02 (t, <i>J</i> = 4.2 Hz, 6H); ¹³ C-NMR (400 MHz, DMSO- <i>d</i> ₆): δ 169.0, 159.6, 130.9, 127.8, 126.1, 123.8, 118.9, 117.9, 64.2, 51.9, 51.8, 50.6, 46.9, 41.2, 34.0, 27.6, 27.5, 23.8, 22.8, 20.5, 13.5, 12.0, 11.8; HRMS (<i>m/z</i>): [M] ⁺ calcd for C ₂₈ H ₄₃ N ₅ O ₃ S, 529.7506; found, 529.7497. | |
| 7 |  | ¹ H-NMR (400 MHz, DMSO- <i>d</i> ₆ +CCl ₄): δ 9.00 (s, 1H), 7.32 (d, <i>J</i> = 4.4 Hz, 1H), 4.48 (d, <i>J</i> = 5.4 Hz, 1H), 3.77 (d, <i>J</i> = 5.4 Hz, 1H), 3.22-3.13 (m, 1H), 2.32 (s, 3H), 2.13 (s, 3H), 2.02 (s, 3H), 2.00-1.4 (m, 20H), 1.41 (s, 3H); ¹³ C-NMR (400 MHz, DMSO- <i>d</i> ₆): δ 168.7, 158.2, 131.0, 128.2, 126.3, 123.7, 120.4, 119.7, 118.1, 65.9, 58.9, 57.5, 51.2, 50.6, 33.9, 33.8, 29.5, 27.8, 27.7, 25.4, 24.8, 23.8, 23.7, 22.9, 20.6, 13.5, 11.7; HRMS (<i>m/z</i>): [M] ⁺ calcd for C ₂₇ H ₃₈ N ₄ O ₃ S, 498.6929; found, 498.6922. | |
| 8 |  | ¹ H-NMR (400 MHz, DMSO- <i>d</i> ₆ +CCl ₄): δ 9.0 (s, 1H), 7.31 (d, <i>J</i> = 4.0 Hz, 1H), 4.49 (d, <i>J</i> = 5.6 Hz, 1H), 3.82 (d, <i>J</i> = 5.6 Hz, 1H), 3.71-3.6 (m, 1H), 3.6-3.49 (m, 1H), 3.23-3.16 (m, 1H), 2.61-2.5 (m, 6H), 2.30 (s, 3H), 2.12 (s, 3H), 2.02 (s, 3H), 1.86-1.31 (m, 20H), 1.53 (s, 3H); ¹³ C-NMR (400 MHz, DMSO- <i>d</i> ₆): δ 169.1, 159.6, 130.9, 127.8, 126.1, 123.7, 118.9, 117.9, 64.2, 56.8, 55.1, 51.8, 50.6, 34.0, 27.9, 27.6, 27.5, 26.5, 23.8, 22.8, 20.5, 13.5, 11.8; HRMS (<i>m/z</i>): [M] ⁺ calcd for C ₃₀ H ₄₅ N ₅ O ₃ S, 555.7889; found, 555.7895. | |
| 9 |  | ¹ H-NMR (400 MHz, DMSO- <i>d</i> ₆ +CCl ₄): δ 9.04 (s, 1H), 7.28 (d, <i>J</i> = 4.2 Hz, 1H), 4.48 (d, <i>J</i> = 5.6 Hz, 1H), 3.82 (d, <i>J</i> = 5.6 Hz, 1H), 3.70-3.6 (m, 1H), 3.59-3.49 (m, 1H), 3.49-3.3 (q, <i>J</i> = 4.6 Hz, 2H), 3.24-3.12 (m, 1H), 2.33 (s, 3H), 2.14 (s, 3H), 2.03 (s, 3H), 1.91-1.30 (m, 14H), 1.51 (s, 3H), 1.13 (t, <i>J</i> = 4.6 Hz, 3H); ¹³ C-NMR (400 MHz, DMSO- <i>d</i> ₆): δ 169.0, 159.7, 130.8, 127.8, 126.1, 123.7, 119.0, 117.8, 67.8, 65.2, 64.4, 51.9, 50.5, 34.0, 33.9, 29.9, 27.6, 27.6, 23.7, 22.8, 20.5, 15.1, 13.5, 11.8; HRMS (<i>m/z</i>): [M] ⁺ calcd for C ₂₇ H ₄₀ N ₄ O ₄ S, 516.7083; found, 516.7078. | |

Таблиця 1.19-20.

| № п.п. | Формула | Мол. маса | Спектральні дані |
|---------|---|-----------|---|
| 1.19(1) |  | 413,52 | Мас -спектр. m/z 414 (M+1) |
| 1.20(1) |  | 493,59 | ¹ H ЯМР (DMSO d ₆ , δ): 8.22 t (J = 5.9 Hz, 1H), 7.89 s (1H), 7.53-7.56 m (2H), 7.36 t (J = 7.3 Hz, 1H), 7.12-7.14 m (2H), 6.60-6.62 m (2H), 5.57 s (1H), 5.13 d (J = 14.6 Hz, 1H), 4.52 d (J = 15.0, 1H), 4.26 d (J = 14.6 Hz, 1H), 4.10 q (J = 6.9 Hz, 2H), 3.88 dd (J = 17.2, 5.9 Hz, 1H), 3.75 dd (J = 17.2, 5.9 Hz, 1H), 3.50 s (3H), 3.33 d (J = 15.0 Hz, 1H), 2.58 s (3H), 1.18 t (J = 6.9 Hz, 3H); ¹³ C ЯМР (DMSO d ₆ , δ): 169.8, 169.7, 169.3, 158.5, 157.0, 145.6, 140.6, 134.4, 130.7, 129.5 (2C), 129.4, 125.9, 125.8, 125.5, 125.2, 113.6 (2C), 65.4, 60.9, 55.0, 51.7, 41.8, 31.8, 17.5, 14.2. |
| 1.20(2) |  | 465,53 | Мас -спектр: m/z 466 (M+1) |

Таблиця 1.21-22.

| № п.п. | Формула | Мол.маса | Спектральні дані |
|--------|---|----------|--|
| 1. |  | 466,564 | Масс-спектр: m/z 467(M+H). |
| 1. |  | 466,564 | Масс-спектр: m/z 467(M+H). |
| 1. |  | 466,564 | <p>NMR-¹H (CDCl₃): dd 8.06 (1H, J=9.5 Hz, J=2.9 Hz), d 7.82 (1H, J=2.9 Hz), d 7.33 (2H, J=8.8 Hz), d 6.90 (2H, J=8.8 Hz), d 6.53 (1H, J=9.5 Hz), d 5.17 (1H, J=14.3), br.s 5.11 (1H), s 4.64 (1H), m 4.41-4.45 (1H), d 4.09 (1H, J=14.3), s 3.60 (3H), m 3.46-3.52 (1H), m 3.34-3.44 (1H), m 2.68-2.76 (1H), m 1.96-2.16 (2H), s 1.08 (9H). Масс-спектр: m/z 467(M+H).</p> |

1063

84447

1064


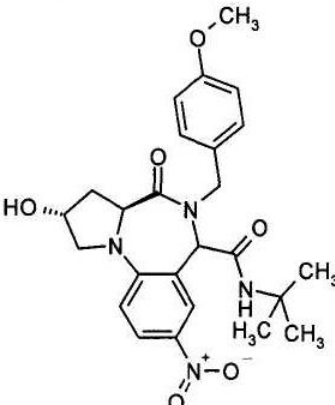
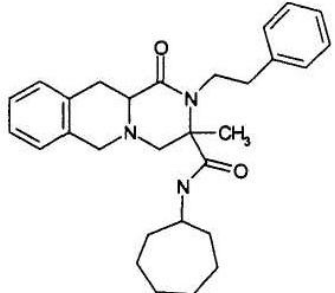
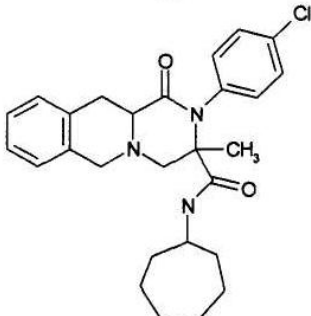
| | | | |
|--|--|---------|--|
| |  | 466,564 | <p>NMR-¹H (CDCl₃): dd 8.20 (1H, J=8.8 Hz, J=2.6 Hz), d 7.70 (1H, J=2.6 Hz), d 7.24 (2H, J=8.4 Hz), d 7.01 (1H, J=8.8 Hz), d 6.90 (2H, J=8.4 Hz), d 5.16 (1H, J=14.7), br.s 4.94 (1H), s 4.68 (1H), d 4.43 (1H, J=14.7), s 3.83 (3H), m 3.68-3.77 (1H), m 3.27-3.34 (1H), m 3.18-3.24 (1H), m 2.51-2.62 (1H), m 2.31-2.44 (1H), m 1.87-2.05 (2H), s 1.14 (9H). Мас -спектр: m/z 467(M+H).</p> |
| |  | 482,54 | <p>Мас -спектр: m/z 483(M+H).</p> |

Таблица 1.23

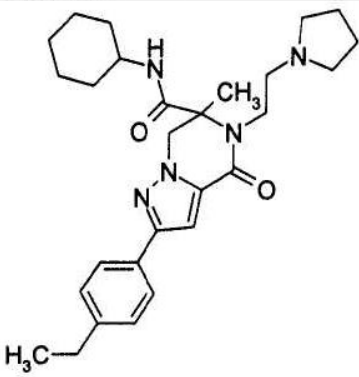
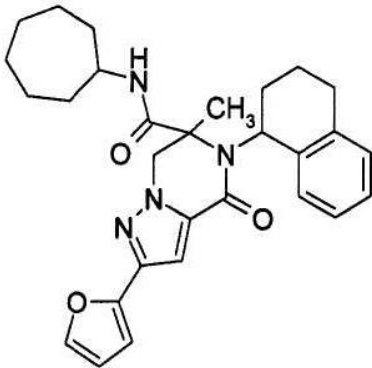
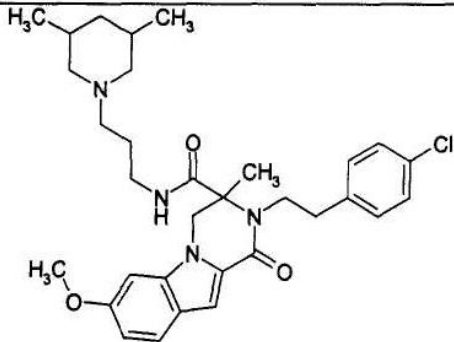
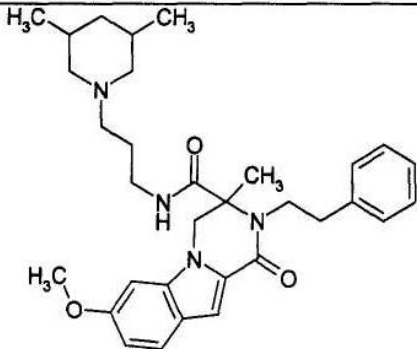
| № п.п. | Формула | Мол.масса | Мас -спектр, m/z (M+1), ПМР спект |
|--------|---|-----------|-----------------------------------|
| 1 |  | 459,63714 | 460 |
| 2 |  | 466,02799 | 467 |

| | | | |
|---|--|-----------|--|
| 3 | | 494,08217 | LC MS, m/z: 495 (M+1). ¹ H NMR: 0.79 - 1.08 (m, 4H, H and CH ₃ at -CH-Me of 4-Me-cyclohexil ring); 1.10 - 1.88 (m, 11H, CH ₃ of N-C-Me and 4 - CH ₂ - of 4-Me-cyclohexil ring); 2.68 - 2.93 (m, 6H, H at C11 of 1,3,4,6,11,11a-hexahydro-2H-pyrazino[1,2-b]isoquinoline, 4H of N-C. |
| 4 | | 445,61005 | LC MS, m/z: 446 (M+1). ¹ H NMR: 1.25 (s, 3H, CH ₃); 1.30 - 1.70 (m, 12H, 6 -CH ₂ -, cycloheptyl); 2.68 (d, 1H, H at C11 of 1,3,4,6,11,11a-hexahydro-2H-pyrazino[1,2-b]isoquinoline, J=14.0 Hz); 2.82 (t, 1H, H at C11 of 1,3,4,6,11,11a-hexahydro-2H-pyrazino[1,2-b]isoquinoline, J=14... |
| 5 | | 494,08217 | LC MS, m/z: 495 (M+1). ¹ H NMR: 1.10 - 1.80 (m, 15H, 6 -CH ₂ -, cycloheptyl and CH ₃); 2.64 - 3.00 (m, 6H, H ₂ at C11 of 1,3,4,6,11,11a-hexahydro-2H-pyrazino[1,2-b]isoquinoline and 4H of N-CH ₂ -CH ₂ -Ar); 3.05 - 3.48 (m, 4H, H ₂ at C4 of 1,3,4,6,11,11a-hexahydro-2H-pyrazino[1,2-b]i... |
| 6 | | 423,60369 | LC MS, m/z: 424 (M+1). ¹ H NMR: 1.10 - 1.95 (m, 23H, 4 -CH ₂ -, cyclopentyl, 6 - CH ₂ - cycloheptyl and CH ₃); 2.30 (br. s, 1H, CH of cyclopentyl); 2.62 - 2.78 (m, 3H, H at C11a of 1,3,4,6,11,11a-hexahydro-2H-pyrazino[1,2-b]isoquinoline, 2H at C11 of 1,3,4,6,11,11a-hexahydro-... |
| 7 | | 475,63654 | LC MS, m/z: 476 (M+1). ¹ H NMR: 1.15 - 1.80 (m, 15H, 6 -CH ₂ -, cycloheptyl and CH ₃); 2.64 (d, 1H, H at C11 of 1,3,4,6,11,11a-hexahydro-2H-pyrazino[1,2-b]isoquinoline, J=14.3 Hz); 2.78 (t, 1H, H at C11 of 1,3,4,6,11,11a-hexahydro-2H-pyrazino[1,2-b]isoquinoline, J=14.3 Hz); ... |

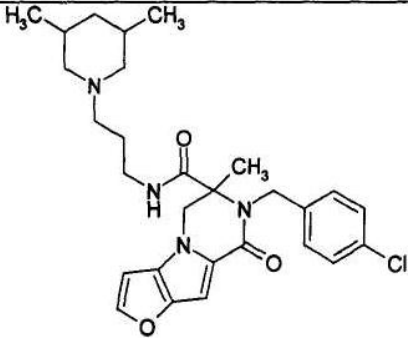
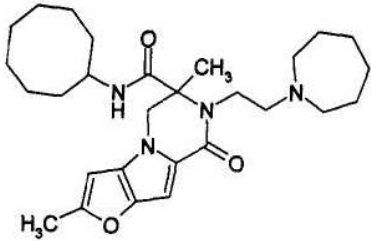
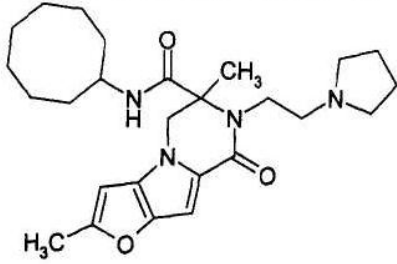
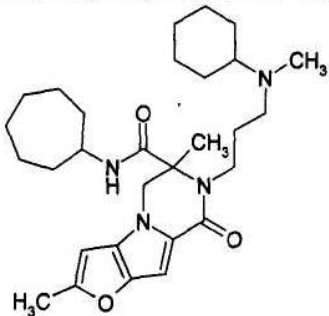
| 1067 | 84447 | 1068 |
|----------|-----------|---|
| <p>8</p> | 452,0009 | <p>LC MS, m/z: 453 (M+1). ¹H NMR: 1.05 - 1.82 (m, 11H, 4 -CH₂-, cyclopentyl and CH₃); 2.62 - 2.83 (m, 2H, H at C11 of 1,3,4,6,11,11a-hexahydro-2H-pyrazino[1,2-b]isoquinoline and H at C11a of 1,3,4,6,11,11a-hexahydro-2H-pyrazino[1,2-b]isoquinoline); 3.10 - 3.41 (m, 3H, H at C...</p> |
| <p>9</p> | 417,55587 | <p>LC MS, m/z: 418 (M+1). ¹H NMR: 1.10 - 1.80 (m, 11H, 4 -CH₂-, cyclopentyl and CH₃); 2.71 (m, 2H, 2H at C11 of 1,3,4,6,11,11a-hexahydro-2H-pyrazino[1,2-b]isoquinoline); 3.11 - 3.53 (m, 4H, H at C11a of 1,3,4,6,11,11a-hexahydro-2H-pyrazino[1,2-b]isoquinoline, H at C4 of 1...</p> |

Таблиця 24. Величини відсотка інгібування клітинного росту досліджуваними речовинами на прикладі трьох клітинних культур.

| № сполуки | Формула | Клітинні культури | | |
|-------------|---------|-------------------|--------|-----------------|
| | | DLD-1 | DU-145 | T-47D |
| 1.5(2){105} | | 46 | 59 | 75 |
| 1.5(3){44} | | 98 | 94 | 97 _~ |

| | 1069 | 84447 | 1070 | |
|-------------|---|-------|------|----|
| 1.5(3){50} |  | 98 | 92 | 97 |
| 1.5(4){130} |  | 18 | 48 | 80 |
| 1.10(1){18} |  | 97 | 96 | 97 |
| 1.10(1){19} |  | 33 | 68 | 80 |

| | 1071 | 84447 | 1072 | |
|-------------|------|-------|------|----|
| 1.10(1){20} | | 78 | 73 | 97 |
| 1.16(2){28} | | 97 | 98 | 97 |
| 1.16(4){51} | | 62 | 88 | 98 |
| 1.16(5){38} | | 3 | 0 | 66 |
| 1.16(5){66} | | 5 | 74 | 70 |

| | 1073 | 84447 | 1074 | |
|--------------|---|-------|------|----|
| 1.17(3){7} |  | -2 | 31 | 61 |
| 1.17(4){46} |  | 7 | 3 | 64 |
| 1.17(4){47} |  | 5 | 6 | 66 |
| 1.17(5){102} |  | 8 | 2 | 72 |

В описі до патенту на винахід графічні зображення та текст подаються в редакції заявника

Комп'ютерна верстка О. Гапоненко

Підписне

Тираж 28 прим.

Міністерство освіти і науки України

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ДП "Український інститут промислової власності", вул. Глазунова, 1, м. Київ – 42, 01601