

The invention relates to a method for obtaining 1-kestose on an industrial scale, using a recombinant fructosyltransferase (FTF) isolated from *Festuca arundinacea*, constitutively expressed in a non saccharolytic yeast host. According to the invention, the recombinant FTF of the sucrose:sucrose 1-fructosyltransferase (1-SSTrec) type is produced in a constitutive and stable manner and in high yields, both in the supernatant and in the cell sediment of the culture of a strain of *Pichia pastoris*. The invention also relates to a method for obtaining 1-SST on an industrial scale. The resulting recombinant enzyme is used for the mass enzymatic production of fructooligosaccharides (FOS), specifically 1-kestose, from sucrose. The method of the invention allows FOS conversion percentages greater than 55 %, with 1-kestose being represented in more than 90 %.