

Novel methods and compositions for treating aged and environmentally damaged skin are disclosed which provide improvements in the skin's visual appearance, function and clinical/biophysical properties by activating at least one proteolytic enzyme in the skin's stratum comeum. The disclosed treatment methods involve topical application of a novel cosmetic composition containing a combination of a cationic surfactant such as N,N,-dimethyldodecyl amine oxide (DMDAO), an anionic surfactant such as sodium dodecyl sulfate (SDS), or monoalkyl phosphate (MAP) and a chelating agent such as ethylene diamine tetraacetate (EDTA) to stimulate a chronic increase in the replacement rate of the skin's stratum comeum by means of comeum protease activation. This chronic, low level stimulation is effective to induce repair and replacement of the stratum comeum, epidermis, and dermis of the skin and improvements in the appearance, function, and anti-aging properties of the skin.