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New approaches for tyrosinase inhibitors: Mannich bases of kojic acid derivatives

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Kojic acid (5-hydroxy-2-hydroxymethyl-4H-pyran-4-one), the most intensively studied inhibitor of tyrosinase, was discovered in 1907. Since early twentieth century, it has been known as an additive to prevent browning of food materials such as crab, shrimp, and fresh vegetables in food industry (e.g., as an antioxidant or anti-browning agent) in order to preserve their freshness and to inhibit discoloration. Tyrosinase inhibitors can be used to prevent or treat melanin hyperpigmentation disorders. Therefore, nowadays, they have become increasingly important in medicine, cosmetics and food industries. They have found to have an important role in cosmetic industry for their skin lightening effect and depigmentation after sunburn. Kojic acid is currently used in tyrosinase inhibitors those are commercially available. Unfortunately, unstability during storage limits its use and new tyrosinase inhibitors of novel kojic acid derivatives are needed in cosmetics industry. More expended studies on this subject will be helpful in designing more suitable tyrosinase inhibitors for human use. Several natural or synthetic tyrosinase inhibitors have been discovered. However, a few of them can be used as skin bleaching agents due to the toxicity problems. Development of high-performance tyrosinase inhibitors is currently needed for these fields. An object of the present invention is to synthesize new Mannich bases of kojic acid derivatives, which have better permeability than kojic acid and are not irritative, in high amounts and without by-product formation by means of a simple and efficient method that is conducted at room temperature. By increasing oil solubility of the obtained compounds, low permeability problem of the kojic acid is eliminated.

Biography

Mutlu Dilsiz Aytemir has completed her PhD at Hacettepe University in 2000 and done practical PhD studies at London University King's College Department of Pharmacy from 1998 to 2000. She is a Lecturer at Hacettepe University from 2004 and become full professor in 2010. She has published 23 papers, 56 oral or poster presentation and a book chapter. Also, she is interested in medicinal chemistry in the field of synthesis of some Mannich bases that have antityrosinase, anti-aging, anticonvulsant, antiviral, antimicrobial, antitubercular, antioxidant and antimelanoma activities. She has incorporated Koji Cosmetic Chemistry Company in Türkiye. She will develop new dermocosmetic products having antityrosinase and anti-aging activities.

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