Tyrosinase inhibitory effect of derivatives 1, 2 and 3 of triazol benzimidazole and kinetic study of inhibitory enzyme and molecular docking

Mehdi Khoshneviszadeh[a,b],Najme edraki [b], Omidreza Firuzi[b], Amirhossein Sakhteman[a,b], Amene Dehghani

[a]Department of Medicinal Chemistry, School of Pharmacy, Shiraz University of Medical Sciences

[b]Medicinal and Natural Products Chemistry Research Center, Shiraz University of Medical Sciences

Tyrosinase is a multifunctional, glycosylated, and copper-containing oxidase, which catalyzes the first two steps in mammalian melanogenesis and is responsible for enzymatic browning reactions in damaged fruits during post-harvest handling and processing. Neither hyperpigmentation in human skin nor enzymatic browning in fruits are desirable. These phenomena have encouraged researchers to seek new potent tyrosinase inhibitors for use in foods and cosmetics. For this purpose, the inhibitory effect of 19 benzimidazole-based compounds on tyrosinase enzyme was investigated tyrosinase test by comparing with kojic acid .The results of these tests show thats . Two substances A4 and A8 at 50 µm concentration exhibited the highest inhibitory activity of fungal tyrosinase with IC50 = 10.33 µM and IC50 = 11.7 µM respectively. The results of these tests indicate that the kinetic enzyme is a mixed type. .The results of molecular docking are consistent with the data obtained from tyrosinase inhibition. The A4 ligand has been interacted with histidine 85.The main interaction of A8 were hydrogen bonds with Asp81, Ser282 and copper.

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