Title: The Inhibitory effect of a new synthesized ligand on mushroom tyrosinase

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Abstract: Introduction: Tyrosinase (EC 1.14.18.1) is a copper containing enzyme that is widely distributed in microorganisms, animals, and plants. Finding new tyrosinase inhibitors with low Ki values is very important because tyrosinase has a major role in both mammalian melanogenesis and enzymatic browning of fruit or fungi. Method: The inhibitory effect of (NZ)-N-[(4-methylphenyl)methylidene]-2-[(2-[(Z)-[(4-methylphenyl)methylidene]amino]phenyl)disulfanyl]aniline on catecholase activity of both forms of mushroom tyrosinase (oxy form and met form) in a 10 mM phosphate buffer solution (pH 6.8), at 20°C with uv spectrophotometer was studied. L-Dopa was used as substrate of catecholase activity. Results: The results show that ligand competitively inhibits both forms of the enzyme with inhibition constants (Ki) of 1.4 and 0.8 μM for oxy and met forms respectively. For further insights the docking study between tyrosinase and ligand was done. The docking simulation showed that ligand binds in the active site of the enzyme near the Cu atoms and makes 2 hydrogen bonds with histidine and proline residues of active site. Conclusions: The Ki values for ligand for two different forms show that ligand has more tendency to bind met-form and also the Ki values show that it is a very potent.

Mushroom Tyrosinase, Inhibition, catecholase, oxy form, met form

Presentation: Poster