Kinetic Studies Guide to Effective Administration of Tyrosinase Inhibitor

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Competitive enzyme inhibitors are of interest mainly for medicinal applications. Structure of inhibitor, the extent of its interaction with the enzyme, and the way the enzyme responds to the inhibitor are among major factors determining the effectiveness of the medicines.
Tyrosinase inhibitors have come to attention in recent decades for medical, nutritional, and cosmetic purposes. However, the side effect and the effectiveness of the introduced formulations which contain at least one of the tyrosinase inhibitors are matter of controversy. Considering the fact that tyrosinase is a tetrameric allosteric enzyme [1-2], we paid attention to the way it responds to the inhibitor. Therefore, during our recent works on tyrosinase [3-4], inhibition of both cresolase and catecholase activities of mushroom tyrosinase have been studied in the presence of various linear, non-linear, and aromatic inhibitors (Fig. 1).

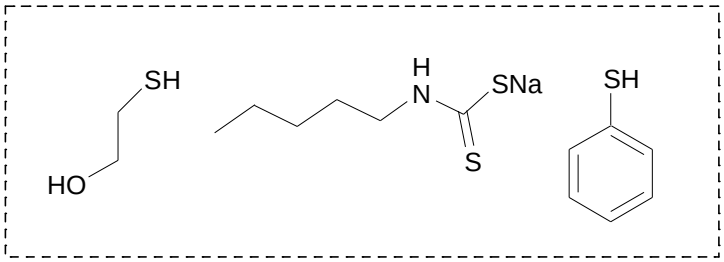

Fig. 1: Structures of some studied tyrosinase inhibitor

Results of our comprehensive kinetics studies indicate that the allosteric behaviour of the enzyme is outstandingly modulated through the interaction of the inhibitor with the active site. Although it is too soon to rule out the existence of any other specific site for various effectors on tyrosinase, it seems strongly likely that the active site pocket of the enzyme plays a major role in controlling the power of inhibitors.

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