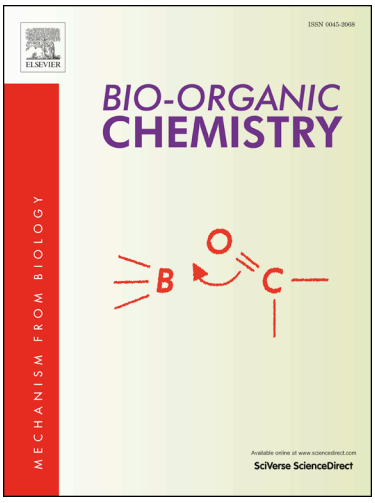

Tyrosinase inhibition by some flavonoids: Inhibitory activity, mechanism by *in vitro* and *in silico* studies

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Tyrosinase inhibition by some flavonoids: Inhibitory activity, mechanism by *in vitro* and *in silico* studies

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Abstract

Flavonoids are main polyphenolic groups widely distributed to fruits, vegetables and beverages we consumed daily. They exhibit many biological effects. We tested tyrosinase inhibitor potential of structurally related (**1-9**) flavonoids and found that all the tested materials possessed tyrosinase inhibitory effect compared to the positive control, kojic acid. **2** exhibited the strongest tyrosinase inhibitory effect with an IC_{50} value of 40.94 ± 0.78 µM in a competitive manner. According to kinetic analysis **1**, **4** and **7** were found to be competitive inhibitors, **3**, **5**, and **6** noncompetitive inhibitors of tyrosinase. According to the docking studies, A and C ring of the flavonoid structure, hydroxyl substituent at the 7^{th} position, and hydroxyl substituents at *para* or *para* and *meta* position of ring B play key role for competitive inhibition of the enzyme.

Keywords: flavonoid; molecular docking; tyrosinase