

Monoamine oxidase B and free radical scavenging activities of natural flavonoids in *Melastoma candidum*

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Abstract

Monoamine oxidase type B (MAO-B) activity and free radicals are elevated in certain neurological diseases. Four natural flavonoids, quercitrin, isoquercitrin, rutin, and quercetin, were isolated for the first time from the leaves of *Melastoma candidum* D. Don. They exhibited an inhibitory effect on MAO-B. These potent flavonoids were purified using bioassay-guided fractionation and were separated by Diaion, Sephadex LH-20, and MCI CHP20P columns. The IC₅₀ values of the four potent flavonoids, quercitrin, isoquercitrin, rutin, and quercetin on monoamine oxidase were 19.06, 11.64, 3.89, and 10.89 μM and enzyme kinetics analysis revealed apparent inhibition constants (K_i) of 21.01, 2.72, 1.83, and 7.95 μM , respectively, on the substrate, benzylamine. The four potent compounds also exhibited hydroxyl radical scavenging activity as determined using a spin trapping electron spin resonance method. This suggests that the four flavonoids from *M. candidum* possess both MAO-B inhibitory and free radical scavenging activities. These important properties may be used for preventing some neurodegenerative diseases in the future.

Keywords: *Melastoma candidum*; monoamine oxidase B; quercitrin; isoquercitrin; quercetin; rutin; hydroxyl radical scavenging