

Solid-Phase Extraction and Characterization of Quercetrin-Rich Fraction from *Melastoma malabathricum* Leaves

ABSTRACT

This study was focused on the recovery of quercetrin from the crude extract of *Melastoma malabathricum* leaves using the technique of solid-phase extraction. The process variables and their ranges were screened using one-factor-at-a-time and statistically optimized using the response surface methodology. The results found that 9.13 mg/mL of crude extract required 18.24 mL of 70.5% methanol as the eluent to yield an 86.6% w/w fraction containing 36.02 mg/g of quercetrin. The process increased quercetrin from 1% w/w in the crude extract to 4% w/w in the fraction. Quercetrin was likely to be the compound contributing to antiradical and antidiabetic activities. In silico simulation showed that quercetrin had low binding energy and mostly bound with charged (Glu and Arg) and aromatic (Tyr and Phe) amino acids via hydrogen bonds. Its inhibitory progress against DPP-IV was faster than crude extract at low concentration (<100 µg/mL)