

Effects of binary solvent extraction system, extraction time and extraction temperature on phenolic antioxidants and antioxidant capacity from mengkudu (*Morinda citrifolia*).

Abstract

An investigation into the effects of ethanol concentration (0–100%, v/v), extraction time (20–120 min) and extraction temperature (25–65 °C) on the extraction of phenolic antioxidants from mengkudu (*Morinda citrifolia*) was performed using a single-factor experiment. Total phenolic content (TPC) and total flavonoid content (TFC) assays were used for determination of phenolic compounds. Antioxidant capacity was evaluated by measuring the scavenging effect on 2,2'-azino-bis(3-ethylbenzothiazoline-6-sulphonic acid) (ABTS) and 2,2'-diphenyl-1-picrylhydrazyl (DPPH) radicals. Experimental results showed that extraction conditions had significant effect on extraction of phenolic compounds and antioxidant capacities. The optimised conditions were 40% ethanol for 80 min at 65 °C, with values of 919.95 mg GAE/100 g DW for TPC, 472.73 mg CE/100 g DW for TFC, 791.71 µmol TEAC/100 g DW for ABTS and 1928.5 µmol TEAC/100 g DW for DPPH. TPC was significantly correlated with DPPH under the effects of ethanol concentration ($r = 0.932$) and extraction time ($r = -0.938$).

Keyword: Mengkudu (*Morinda citrifolia*); Total phenolic content (TPC); Total flavonoid content (TFC); 2,2'-Azino-bis(3-ethylbenzothiazoline-6-sulphonic acid) (ABTS) radical-scavenging capacity; 2,2-Diphenyl-1-picrylhydrazyl (DPPH) radical-scavenging capacity.