

Effects of extraction techniques on phenolic components and antioxidant activity of Mengkudu (*Morinda citrifolia* L.) leaf extracts.

ABSTRACT

The effect of four extraction techniques namely; solvent extraction (SE), microwave-assisted extraction (MAE), ultrasonic-assisted extraction (UAE) and supercritical fluid extraction (SFE) on the phenolic components and antioxidant activity of *Morinda citrifolia* leaf extracts was investigated. Total phenolics compounds (TPC) were quantified spectrophotometrically using Follin-Ciocalteu reagent method, while the catechins were analyzed by reverse-phase high performance liquid chromatography (RP-HPLC). Antioxidant activity of the extracts was evaluated by determining 2,2-diphenyl-1-picrylhydrazyl (DPPH) capacity and ferric ion reducing antioxidant potential (FRAP). Overall, MAE produced extract exhibited the maximum amount of TPC and catechin while UAE-extract had the highest antioxidant activity. It could be concluded that, even though MAE extract contained high TPC and catechin, the accelerated temperature used during this extraction technique might have attributed to reduce the antioxidant activity of this extract. Therefore, UAE can be recommended for recovery of potent natural antioxidant components from *M. citrifolia* leaf offering better antioxidant activity.

Keyword: *Morinda citrifolia* leaf; Antioxidant extraction; Total phenolics; Ferric reducing potential; 2,2-diphenyl- 1-picrylhydrazyl (DPPH); Catechin; High performance liquid chromatography (HPLC).