

Optimization of Ultrasound-Assisted Extraction of Curcuminoids from Temulawak (*Curcuma xanthorrhiza* Roxb.)

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ABSTRACT

*Rhizomes of Temulawak have been an important part of the human health for centuries and is one of important commodities in Indonesian herbal industries. Its appeal is for its reported health benefits which is attributed to its high curcuminoids and essential oil contents. In this research, the extraction of curcuminoids from temulawak was using food grade ethanol solvent. Optimization of extraction was carried out using surface response methodology (RSM). Selected experimental design referred to as Box-Behnken design which had three factors and three levels (3³). Independent variables were solvent to solid ratios (5; 7 and 9 v/w), extraction time (15, 30 and 45 minutes) and extraction temperature (35, 45 and 55 °C) and dependent variable was extracted curcuminoids. The extraction of curcuminoids varied with solvent to solid ratio, extraction time and temperature. At a constant solvent to solid ratio, increasing extraction temperature and time would increased curcuminoids contents until a maximum and then decreased with further increase in temperature and time of extraction. Predicted response indicated that the temperature at 50 °C, solvent to solid ratio at 5 v/w and extraction time at 25 minute was suitable for the ultrasound assisted extraction of curcuminoids from Temulawak (*Curcuma xanthorrhiza* Roxb.).*

Key words : *Curcuma xanthorrhiza* Roxb; curcuminoids; optimization; ultrasound-assisted extraction