

## **Response surface optimization of high antioxidative extraction from *Curcuma zedoaria* leaves**

### **ABSTRACT**

Response surface methodology (RSM) has been fully utilized in this study to model and optimize the extraction conditions for maximum antioxidant compounds activity from *Curcuma zedoaria* leaves. This work was carried out based on three factor/5 level of central composite rotatable design (CCRD) and three independent variables, namely extraction temperature (60-80 °C), processing time (80-120min) and solvent concentration (70-90 v/v %). The experimental data was subjected to total antioxidant activity measured by the 1, 1-diphenyl-2-picrylhydrazyl (DPPH)-radical scavenging,  $\beta$ -carotene bleaching (BCB) inhibition as well as ferric ion reducing antioxidant power (FRAP). By using the desirability functions, the optimal conditions were found to be at temperature 75 °C, 92 min and (90:10 v/v%) ethanol concentration for the highest total antioxidants values for DPPH, BCB and FRAP were 85.76%, 81.35 % and 5.08 mM Fe<sup>2+</sup> g/DW respectively, which closely agreed with the predicted values of 87.59%, 82.29%, 5.25 mM Fe<sup>2+</sup> g/DW respectively. Thus, indicating the suitability of the model employed in RSM to optimizing the extraction conditions.

**Keyword:** *Curcuma zedoaria* leaves; Antioxidant activity; RSM; DPPH; FRAP; BCB