

## **Extraction of tocopherol-enriched oils from Kalahari melon and roselle seeds by supercritical fluid extraction (SFE-CO<sub>2</sub>).**

### **ABSTRACT**

Tocopherol-enriched oil was extracted by supercritical fluid extraction of carbon dioxide (SFE-CO<sub>2</sub>) from Kalahari melon and roselle seeds. The SFE-CO<sub>2</sub> process was optimised using response surface methodology (RSM) with central composite design (CCD). Three SFE-CO<sub>2</sub> parameters namely extracting pressure, extracting temperature, and flow rate of carbon dioxide were examined. The optimal SFE-CO<sub>2</sub> conditions were determined and the quadratic response surfaces were drawn from the mathematical models. The optimal SFE-CO<sub>2</sub> conditions for the extraction tocopherol-enriched oil from Kalahari melon seeds were: extracting pressure 290 bar, extracting temperature 58C, and flow rate of carbon dioxide 20 ml/min. The optimum conditions for roselle seeds were extracting pressure 200 bar, extracting temperature 80C, and flow rate of carbon dioxide 20 ml/min. These optimum conditions yielded tocopherol concentration of 274.74 and 89.75 mg/100 g oil from Kalahari seed and roselle seed, respectively. No significant ( $P > 0.05$ ) differences were obtained between the experimental and predicted values.

**Keyword:** Supercritical fluid extraction (SFE-CO<sub>2</sub>); Kalahari melon seed oil; Roselle seed oil; Response surface methodology (RSM); Tocopherol concentration.