

**Physicochemical properties of Kalahari melon seed oil following extractions using solvent and aqueous enzymatic methods.**

**ABSTRACT**

The physico-chemical properties of oil from Kalahari melon seed were determined following extraction with petroleum ether and aqueous-enzymatic methods. Two different enzymes Flavourzyme 1000 L and Neutralse 0.8 L were separately used during aqueous-enzymatic method. The free fatty acid, peroxide, iodine and the saponification values of the oils extracted using the methods were found to be significantly ( $P < 0.05$ ) different. The melting point of the oils extracted was in the range of  $18.7\text{ }^{\circ}\text{C}$  to  $17.5\text{ }^{\circ}\text{C}$  and no significant ( $P > 0.05$ ) difference between the oil obtained from solvent and aqueous-enzymatic extractions was observed. Enzyme-extracted oil tended to be light-coloured and more yellow in colour compared with solvent-extracted oil. The predominant fatty acids in the extracted oils were linoleic acid (62.2–63.1%), with some oleic (16.8–17.1%), palmitic (11.4–12.4%), stearic (7.5–8.1%), linolenic (0.7–1.2%) and eicosenoic(0.3%). Phenolic acids in enzyme-extracted oils were comparable to the solvent-extracted oil. The oils extracted with these two methods were differed in the composition of their phytosterol and tocopherol contents, but no significant ( $P > 0.05$ ) difference between the two enzyme-extracted oils was observed.

**Keyword:** Aqueous-enzymatic oil extraction; Chemical composition; Flavourzyme; Kalahari melon seed; Neutralse; Oil extraction; Oilseeds; Phenolic acid; Phytosterol; Thermal properties; Tocopherol.