

A Comparative Study of the Properties of Six Sudanese Cucurbit Seeds and Seed Oils

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Abstract The proximate analysis of seeds and physico-chemical properties of oils extracted from six Sudanese cucurbit seeds *Cucumis mello* var. *agrestis*, *Cucumis melo* var. *flexuosus*, *Cucumis sativus*, *Citrullus lanatus* var. *colocynthoides*, *Cucumis prophetarum*, and *Luffa echinata* were examined by established methods. For each variety, the proximate analysis showed ranges for moisture, protein, and carbohydrates as 3.70–6.87, 14.50–17.50, and 15.62–28.89% on a dry matter basis, respectively. The oils were extracted by Soxhlet using petroleum ether, with yields that ranged from 10.9 to 27.10% (wt/wt). The obtained extracted oils were subjected to physicochemical, fatty acid, and tocopherol analysis. The physicochemical characterization of the oil revealed that the refractive indices and relative densities of the oils fell within the narrow ranges of 1.334–1.442 and 0.874–0.920 g/cm³, respectively. Unsaponifiable

matters ranged between 0.8 and 1.2 mg KOH/g, whilst peroxide values (PV) ranged from 2.3 to 4.1 meq/kg. The ranges of the values for free fatty acid (FFA %) were 1.2–4.0%. The predominant fatty acids were 16:0, 18:0, 18:1, and 18:2 with ranges of 8.9–14.2, 6.0–9.4, 14.6–32.1, and 43.6–65.5%, respectively. γ -Tocopherol was the predominant tocopherol in all samples ranging from 0.8 to 43.2% of the total tocopherols, followed by δ -tocopherol and α -tocopherol.

Keywords Cucurbits · Fatty acids · Seed oils · Tocopherols · *Cucumis sativus* · *Cucumis mello* · *Citrullus lanatus* var. *colocynthoide* · *Cucumis prophetarum* · *Luffa echinata*

Introduction