

5-Physico-chemical and oxidative stability characteristics of roselle (*Hibiscus sabdariffa* L.) seed oil as by-product

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Abstract

Certain density characteristics of roselle (*Hibiscus sabdariffa* L.) seeds including 1000-seed and hectoliter weights were determined; average of each determination was 32.2 g and 68.55 kg, respectively. The proximate composition of whole roselle seeds indicated that, seeds contained relatively high fat and protein contents (20.97% and 29.61 %, respectively). The physico-chemical parameters of crude oil extracted from roselle seed by soaking at room temperature (cold extraction) indicated that the oil had refractive index, 1.4674; yellow-greenish color, 0.078 (at 420nm); acidity, 0.78 %; saponification value, 196.82; iodine value, 97.62 (g of I₂/100 g oil); unsaponifiable matter, 1.52 %; peroxide value, 4.82 (meq O₂//kg oil); *p*-anisidine value, 6.21; and Totox number, 15.85. Gas liquid chromatography technique has been developed for identification and quantitative determination of total unsaturated and saturated fatty acids shows that the crude oil had 73.40 % and 26.57 % respectively. Major fatty acid found was oleic acid (38.46 %) followed by linoleic (33.25 %), palmetic (20.52 %) and stearic (5.79 %). Stability of crude roselle seed oil against oxidation during the accelerated storage of oil indicated that the crude oil had induction period 10 days at 65°C. The relatively high fat content of seeds and, high protein content of resulted meal beside, the relatively high oxidation stability of tested oil. Suggest that the roselle seeds could be novel and economic source of healthy edible fat and other food industry applications.

Key words: Roselle (*Hibiscus sabdariffa* L.) seed, cold extraction, edible oil, chemical composition, fatty acids, oxidative stability.