622/E2

Study on avocado oil extraction and analysis of physcio-chemical properties

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Oil extracted from avocado pear is considered as a valuable product because of its high stability and nutritional benefits and its different uses in food and cosmetic industries. The highest oil yielding varieties were detected from the selected avocado varieties found in Sri Lanka while determining an efficient oil extraction method by using chemical and physical methods with slight modifications. The oil extracts of avocado pear from different varieties and proximate analysis of avocado seed were conducted according to AOAC methods and the fatty acid composition of each variety was analyzed by gas chromatography. Fruit shape, size, color and seed:pulp ratios were found as prominent physical characteristics useful in the identification of the varieties. According to the results of proximate analysis of avocado seed, the average composition was characterized by having 66.37 ± 0.25% of moisture, 21.07 ± 0.23% of carbohydrate, 4.18 ± 0.05% of protein, 3.97 ± 0.14% of fiber, 2.58 ± 0.20% of fat and 1.87 ± 0.02% of total ash. Among all varieties, high oil contents were found in Hass, Fuerte and Peradeniya having 65.14 %, 63.27 % and 53.48% respectively. Solvent extraction was more efficient in extracting the oil from avocado pear when compared to the physical method. Highest oil extraction efficiency (70.72%) was obtained for Fuerte variety. Crude oils obtained from all varieties were found to be pleasant in odor, translucent in clarity and dark in color. Specific gravity of oil was in the range of 0.920 – 0.929 and refractive index 1.46 in all varieties. Free fatty acid contents of avocado oil ranged from 4.3 % to 1.0 % and the peroxide values ranged from 55.5 mEq/Kg to 3.6 mEq/Kg**.** The iodine values of avocado oil were between 94.40 g/100g - 43.02 g/100 g and the total polyphenol content of oil was in the range of 97.31 µg/ml to 29.62 µg/ml with respect to gallic acid standard. The fatty acid composition of extracted avocado oil depends on its variety and was predominantly composed of palmitic, palmitoleic, stearic, oleic and linoleic acid. Among them, oleic was the most abundant fatty acid and stearic acid was the least. The highest oleic acid content was obtained from the imported avocado oil (67.71 %) and the highest linoleic acid content (16.79 %) was from the Reed variety. The highest saturated fatty acid contents of palmitic acids (25.96 %) and stearic acids (1.38 %) were respectively obtained from Hass and imported oil varieties. The melting point of avocado oil was in the range of 21-26 °C and smoke, flash and fire points were at the temperatures of 263 °C, 315 °C and 340 °C respectively.

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