

Effect of Extraction Methods on the Fatty Acids and Physicochemical Properties of Serendipity Berry Seed Oil

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Abstract : Serendipity berry (*Dioscoreophyllum cumminsii* diel) is a tropical dioecious rainforest vine and native to tropical Africa. The vine grows during the raining season and is used mainly as sweetener. The sweetener in the berry is known as monellin which is sweeter than sucrose. The sweetener is extracted from the fruits and the seed is discarded. The discarded seeds contain bitter principles but had high yield of oil. Serendipity oil was extracted using three methods (N-hexane, expression and expression/n-hexane). Fatty acids and physicochemical properties of the oil obtained were determined. The oil obtained was clear, liquid and have odour similar to hydrocarbon. The percentage oil yield was 38.59, 12.34 and 49.57% for hexane, expression and expression-hexane method respectively. The seed contained high percentage of oil especially using combination of expression and hexane. Low percentage of oil was obtained using expression method. The refractive index values obtained were 1.443, 1.442 and 1.478 for hexane, expression and expression-hexane methods respectively. Peroxide value obtained for expression-hexane was higher than those for hexane and expression. The viscosities of the oil were 125.8, 128.76 and 126.87 cm³/s for hexane, expression and expression-hexane methods respectively which showed that the oil from expression method was more viscous than the other oils. The major fatty acids in serendipity seed oil were oleic acid (62.81%), linoleic acid (22.65%), linolenic (6.11%), palmitic acid (5.67%), stearic acid (2.21%) in decreasing order. Oleic acid which is monounsaturated fatty acid had the highest value. Total unsaturated fatty acids were 91.574, 92.256 and 90.426% for hexane, expression, and expression-hexane respectively. Combination of expression and hexane for extraction of serendipity oil produced high yield of oil. The oil could be refined for food and non-food application.

Keywords : serendipity seed oil, expression method, fatty acid, hexane

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