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MULTI-RESPONSE OPTIMIZATION OF AQUEOUS OIL EXTRACTION FROM FIVE VARIETIES OF CAMEROON-GROWN AVOCADOS

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Abstract

Production of avocado oil could be a way of reducing avocado *post*-harvest losses in Cameroon. The optimization of extraction of oil from five varieties of avocado was conducted using the Response Surface Methodology (RSM). The five varieties were *Booth 7, Booth 8, Collinson, Hickson* and *Lula*. The extraction efficiency (EE) was investigated with respect to four variables: temperature (T), time (t), pH and water-to-pulp ratio (WPR). A two-level full factorial design was used to develop regression models for the responses, and the desirability function of the multiple response surface methodology to determine the optimal conditions of extraction of the five cultivars. The results showed that the extraction efficiency was linearly affected by the variables depending on the variety. The optimal conditions were found to be 45°C, 180 min, 4.5 and 6 respectively for the temperature, time, pH and water-to-pulp ratio with the extraction efficiencies ranging from 7.86 to 31.42% of fresh, mature and ripe sample.

Key words: aqueous extraction, avocado oil, full factorial design, multiple response methodology

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