



Influence of drying air temperature on fatty acid concentration of sacha inchi seeds (*Plukenetia volubilis* L.)

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Sacha inchi (*Plukenetia volubilis* L.) is a species which belongs to the Euphorbiaceae family, also known as Amazon Peanut or Lopo seed. This species is native from the Andean region and can be found throughout the Amazon region, being in Brazil, easily found in the northern region and some southeastern states. As main characteristics, its seed is oval with dark brown coloration, rich in proteins, in addition to present in the composition of its oil a large amount of Omega 3, 6 and 9 poly-unsaturated acids (Bordignon, Ambrosano and Rodrigues, 2012; Guillén, *et al.*, 2003).

The cultivation of sacha inchi (*Plukenetia volubilis* L.) seeds increased in southern Colombia over the years, mainly due to its content of polyunsaturated oils, besides being present in the diet of the native peoples of the Amazon region and in the use in Traditional medicine. Seed studies have been increasing due to their oil production potential, as this is a source of bioactive compounds and macronutrients, being widely used in Peruvian industries for the purpose of producing olive oil (Bordignon, Ambrosano and Rodrigues, 2012; Kumar *et al.*, 2014).

The seeds used were supplied by the Brazilian Agricultural Research Corporation – Embrapa. After obtaining these, they were subjected to cleaning. The drying process of the seeds in the stove consisted of four different temperatures. The seeds of sacha inchi (*Plukenetia volubilis* L.) were first peeled and crushed, separated 100 g of crushed seed for drying until no more mass variation occurred. After drying, the seeds were subjected to an extraction by soxhlet using hexane as solvent extractor. The extraction was performed for all drying temperatures.

For the analysis of the oil, calibration curves of the fatty acids studied here were plotted using a graph between the concentrations of the patterns used and the chromatographic peak area. The injections were performed using as mobile phase the mixture between the eluent A (water/formic acid 99.9; 0.1 (v/v)) and the Eluent B (acetonitrile/formic acid 99.9:0.1 (v/v)). Injections of 10 µL, flow by 1.5 L. min⁻¹, wavelength of 205 nm and gradient of the mobile phase A:B of 95:5 (v/v) acetonitrile/water were performed.

In this work we analyzed the influence of the drying air temperature in the fatty acids' composition and the extraction yield of its oil. In the drying process of these seeds denoted that the best temperature for this operation was 50 °C and constant air velocity of 0.067 m/s. In these drying conditions the seeds presented better moisture removal without degradation of important components of the oil. The seeds provided good oil yields for temperatures of 40 °C and 50 °C with constant drying air speeds of 0.067 m/s (47.00% ± 2.545 and 48.15% ± 1.626, respectively). Fatty acid analyses revealed that α-linolenic acids (40.75%) and Linoleic (34.01%) were the main fatty acids present in the oil of sacha inchi seeds. The results indicate that the drying operation at 50 °C and air velocity of 0.067 m/s is ideal for the subsequent extraction of seed oil and maintenance of its main chemical constituents.

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