



EVALUATION OF THE ANTIOXIDANT CAPACITY OF OILS RECOVERED FROM BRAZIL NUT CAKE WITH HEXANE AND ETHANOL

¹ALMEIDA,R.F.; ²SOUZA,P.T.; ³PEREIRA,G.S.L.; ⁴SOBRAL,D.O.; ⁵BATISTA, E.A.C

¹University of Campinas, Department of Food Engineering and Technology – São Paulo,
rafaelfernandes.creajrba@gmail.com

²University of Campinas, Department of Food Engineering and Technology – São Paulo,
patsouza@unicamp.br

³University of Campinas, Department of Food Engineering and Technology – São Paulo,
g234198@dac.unicamp.br

⁴University of Campinas, Department of Food Engineering and Technology – São Paulo,
d234202@dac.unicamp.br

⁵University of Campinas, Department of Food Engineering and Technology – São Paulo,
eacbat@unicamp.br

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Abstract: Cold pressing has been the most common technique for oil extraction from Brazil nut (*Bertholletia excelsa*). As the yield of this process is low, the residual oil present in the cake deserves attention. In order to recovery this residual oil, this study proposed the application of traditional and alternative solvent, as well as, to evaluate the antioxidant capacity of these oils. Oil recovery was carried out using continuous cycle solid-liquid extraction under reflux, using a solid:solvent ratio of 1:15 (g:mL) for 8 hours. Hexane and ethanol were used as solvents and the oil was separated by rotoevaporation at 50 °C. The DPPH method was employed to measure antioxidant capacity. As results, the average yield did not significantly ($p>0.05$) vary when changing the solvent: 59.19 ± 1.66 g/100g with hexane compared to 59.95 ± 1.73 g/100g with ethanol, indicating that both effectively recovered the oil since the cake has around 60 g/100g of oil in its constitution. However, the evaluation of antioxidant capacity revealed that the oil obtained with ethanol demonstrated a notable inhibition percentage of $78.23\pm0.31\%$. This value was considerably higher than that for the commercial oil ($29.22\pm0.33\%$), obtained by cold pressing, and higher than that for the oil extracted with hexane ($48.36\pm0.27\%$). These findings suggest that the choice of extraction solvent plays a significant role in the bioactive properties of the residual oil recovered from Brazil nut remaining

cake. Ethanol stood out for its ability to extract and preserve the antioxidant compounds present Brazil nut cake, which may be associated with its molecular polarity capable of interacting with the antioxidant components. In addition, ethanol exhibits low toxicity and lower risk to human health and the environment, particularly when compared to hexane, which possesses inherent toxicity. Therefore, ethanol is a promising solvent to recover the residual oil from the remaining Brazil nut cake with higher antioxidant capacity.

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