



CONQUIAMB

Congresso Online Nacional de Química Analítica e Ambiental

USE OF A LABMADE SPECTROPHOTOMETER TO EVALUATE THE ANTIOXIDANT ACTIVITY OF TUCUMAN OILS

Congresso Online Nacional De Química Analítica E Ambiental., 1ª edição, de 26/10/2020 a 30/10/2020
ISBN dos Anais: 978-65-86861-45-7

LIMA; Everaldo de Queiroz ¹, PEREIRA; Alexandra de Lima ²

RESUMO

The tucuman is a palm of the *coccinea tribus*, of which numerous varieties are found throughout the Amazon basin, in relatively dry terrains that the floods do not cover. The tucuman oil extracted from the pulp contains 25,6% saturated fatty acids and 74,4% unsaturated fat, represented by palmitic, stearic, oleic and linoleic fatty acids. The pulp content has the following composition: protein, carbohydrates, lipids, vitamin A, calcium, phosphorus, thiamine, riboflavin and ascorbic acid. The β -carotene content in tucumã seeds is more concentrated than in the pulp, reaching a value of 180 to 330 mg/100 g of oil. In the determination of antioxidant activities, the spectrophotometric methods are relatively simple based, invariably, on the sample's decolorizing capacity. The spectrophotometric determination of the antioxidant activity was done using the labmade spectrophotometer developed through PIT-E/0012/2011 and using the commercial photographic spectrophotometer from Bel Photonics to correlate the results obtained by the two equipments. To control and acquire the photometer data, an interface was used, coupled to one of the microcomputer USB. For this, the software was perfected and through this interface, data acquisition and control was performed. This software was developed in Pascal Object language, using Delphi as a development tool. The photometer also underwent improvement and adjustments in its optical system, which allowed the selection of the desired wavelengths for the analysis of tucuman oil through control and data acquisition software recorded in the ADuC812's memory. From the extracted and prepared oils the samples were used to determine the antioxidant activity using the methodology of Molineux 2004. The readings of the wavelengths at 517 nm were monitored every minute, where the reduction in absorbance is observed until the DPPH radical stabilizes. The AAT values for the different diluted solutions of the tucuman samples were organized in a table. A calibration curve was constructed with the different sample concentrations on the x axis, and the mean values of the DPPH radical scavenging capacity (% CS) on the y axis. The calibration curves for the standard and extracts were evaluated by analysis of variance for a

¹ UFAM - ICET, everaldolima.am@gmail.com

² UFAM - ICET, alexandralp1989@gmail.com

significance level of $p < 0,05$. The results for CS_{50} of the quercetin standard and of the tucuman oil extract were $1,4 \mu\text{g.mL}^{-1}$ for the quercetin standard and $50,7 \mu\text{g.mL}^{-1}$ for the tucumã almond oil, with standard deviations of 0,2 and 5,3 respectively. Based on the statistical analysis of the results, tucuman oil showed antioxidant activity, which indicates that the DPPH methodology proved to be viable and the labmade spectrophotometer can be used to determine the antioxidant activity.

PALAVRAS-CHAVE: antioxidant activity, DPPH, spectrophotometer labmade, tucuman oil