

EVALUATION OF ANTIOXIDANT PROPERTIES OF NEEM EXTRACT (*Azadirachta indica*)

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Introduction. It has been reported that neem leaves (*Azadirachta indica*) have antioxidant activity. It showed that aqueous extracts from neem leaves protects against liver damage induced by paracetamol in rats (1), which is attributed to the presence of polyphenols in the plant. Due to importance of these compounds is necessary maintaining the optimal antioxidant activity of polyphenols. This can be achieved through encapsulating compounds in some of the wall material, which exist for this purpose.

The aim of this study was to evaluate the antioxidant activity and polyphenol content in neem extract (*Azadirachta indica*) at different infusion times and determine the protective effect of soy protein as wall material.

Methodology. We used fresh and dried leaves of neem, which were extracted with water during 0, 3, 5, 8, 10, 12 and 15 minutes to obtain infusions. For each sample we determined: antioxidant activity by inhibiting the stable radical DPPH• (1,1-diphenyl-2-picrilhidracilo) (2); quantification of polyphenols by the Folin-Ciocalteu method, expressed as equivalents gallic acid (EAG mg / L) (3), color intensity at 390 nm (4), pH and total solids expressed in °Brix. To the fresh and dry neem extracts obtained at 12 and 8 minutes of infusion respectively, were added 1, 1.5, 2, 2.5 and 3% of soy protein as wall material (Formula 1-5). These infusions were stored for 16 days and every third day the antioxidant activity and the polyphenol content were evaluated.

Results. The ideal time to extract the maximum amount of active compounds of neem leaves were 12 and 8 minutes for fresh and dry leaves, respectively. The pH values showed no differences while the °Bx values remained at zero even after the storage, and the color intensity was increasing (Table 1).

Table 1. Results of analyzes of infusions of neem dry at the final of the storage period.

Sample	pH	°Bx	Color intensity
Formula 1	6.71 ± 0.11	0.00	0.270 ± 0.05
Formula 2	6.80 ± 0.16	0.00	0.334 ± 0.09
Formula 3	6.56 ± 0.09	0.00	0.469 ± 0.06
Formula 4	6.55 ± 0.15	0.00	0.579 ± 0.07
Formula 5	6.52 ± 0.20	0.00	0.669 ± 0.05
Control	6.59 ± 0.08	0.00	0.118 ± 0.05

The infusion of dry neem leaves prepared by 8 minutes, with soy protein, presented during its storage a polyphenol content of 577.52 mg EAG/L (Fig. 1), and antioxidant activity of 0.955 -OD³/min/mg_{i.s.}. During the storage of the five formulations with soy protein, the formula prepared with 1.5% of soy protein, obtained highest content of polyphenols. As time elapses without wall material that protects the bioactive components, polyphenol content decreased.

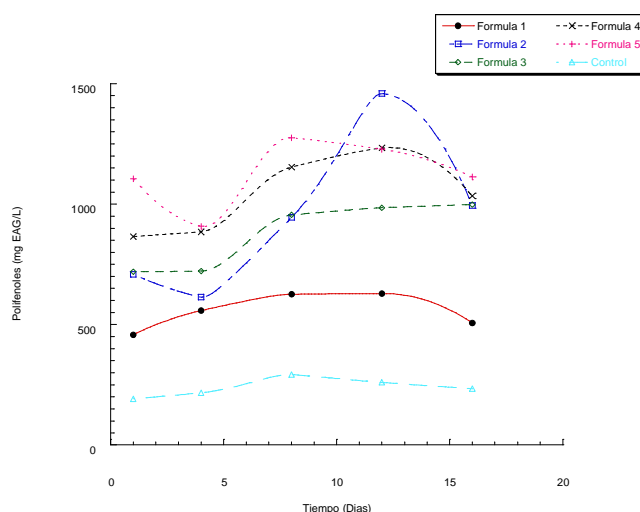


Fig. 1. Polyphenols in tea dry neem with soy protein at different concentrations and days of storage.

Conclusions. The drying process applied to neem leaves favored protecting the phenolic compounds present in neem. The use of wall materials such as soy protein, is a viable alternative to preserve the phenolic compounds and thus can reach the human body intact.

References.

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