ANTIOXIDANT CAPACITY AND PREVENTION OF OXIDATION OF BEVERAGES MADE WITH POMEGRANATE (*Punica granatum* L.) JUICE.

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Introduction. Due to the demand for food products that provide nutritional and health benefits, functional foods have been developed. These products pose bioactive compounds that have potential health benefits. In particular, pomegranate juice contains large quantities of polyphenols, which have a high antioxidant capacity (1). These polyphenols have been associated with the prevention of cardiovascular disease, cancer and neurological damage in humans (2). However, they must be protected against environmental conditions (heat, light, moisture, and oxygen) which have the potential to degrade its properties. One way to protect against degradation reactions is through encapsulation (3).
The aim of this study was to evaluate the antioxidant capacity of beverages made with pomegranate juice, using a suitable biopolymer capable of interacting and protecting colloidally active compounds.

Metodology. Pomegranates (*Punica granatum* L.) were purchased in Ciudad Valles, SLP, Mexico. With the juice two formulas were prepared using gum arabic (F1 and F2) at 1 and 2%, two with karaya gum (F3 and F4) in the same proportion and two with maltodextrin (F5 and F6) at 1.5 and 2.5%. Controls were prepared without wall material to monitor the effect of oxidation of the samples. The blends were stored for 30 days in amber bottles at 4 °C. The determinations were performed on each sample were: antioxidant activity by inhibiting the stable radical DPPH• (1,1-diphenyl-2-picrilhidracilo) (3); quantification of polyphenols by the Folin-Ciocalteu method, expressed as equivalents gallic acid (EAG mg / L) (4), color intensity at 390 nm (5), pH and total solids expressed in °Brix.

Results. At the time of extraction, pomegranate juice without wall material presented 11 °Brix soluble solids, similar to that reported by Magerranov *et al*. (6) and lower than that reported by Gil *et al*. (1) (18.25 °Brix). A pH of 3.44, free radical inhibition of 89.34% and total phenolic content 1600 mg/L (Table 1). But at the end of the storage period (30 days), pomegranate juice without wall material showed the highest percentage of antioxidant activity. As time elapses without wall material that protects the bioactive components, antioxidant activity decreased. The F1 showed greater inhibition of DPPH• radical respect to time, in comparison with the rest of the formulations (Figure 1).

Table 1. Results of analyzes at the beginning of the storage period.

Formulation	Total phenols mg EAG/L	Color intensity D.O. (390 nm.)	% radical inhibition DPPH•	°Brix	pH
JG/control	1600	2.000	89.342	11	4.03
1	1980	1.184	80.803	14	3.44
2	2210	1.289	79.037	15	3.53
3	1580	0.821	49.117	9	3.75
4	1100	0.679	65.107	10	3.53
5	1210	0.210	55.86	12	3.26
6	1350	0.220	68.28	12	3.28

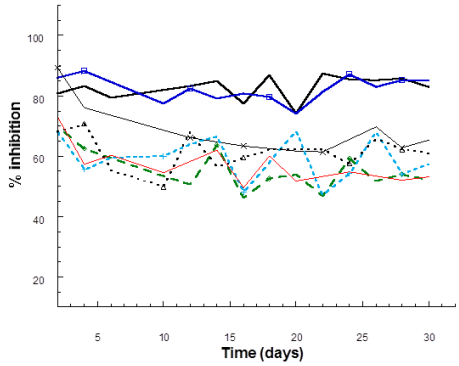

Fig. 1. Correlation between antioxidant activity (% inhibition) and storage time.

F1 F2 F3 F4 F5 F6 CONTROL

CONTROL, pomegranate juice without wall material; F1, 1% arabic gum; F2, arabic gum 2%; F3, karaya gum 1%; F4, karaya gum 2%; F5, 1.5% maltodextrin; F6 , 2.5% maltodextrin.

Conclusion. The antioxidant activity of fresh pomegranate juice has a short duration. It is proposed to use gum arabic as wall material in a beverage formulated from pomegranate juice. Its uses a protective colloid of the antioxidant compounds present in the juice and may help in long-term stability, thus slowing oxidation and ensuring that they are present at the time consumed and thereby provide health benefit to consumers.

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