EXTRACTION AND CHARACTERIZATION PHYSICOCHEMICAL OF MUCILAGE IN CACTUS WASTES

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Introduction. The cactus excretes a vegetable viscous substance called "mucilage" which is produced by the biochemical reactions of the plant. It does not form any solid gels such as citric pectins but solutions of viscous consistency, It has a high capacity to retain water, due to the presence of galacturonic acid that it contains. The mucilage has importance primarely in the industry food, pharmaceutical, paint, and construction. It is possible to extract cactus that already are not consumed as vegetable. The objective of this work was the extraction of mucilage in of cactus wastes and its physicochemical characterization.

Methods. For the extraction of mucilage was proposed an experimental design 2^3 the methodology was based on that described Saenz (2006), with some modifications [1]. The variables were the pH (2.5 and 4.5), the extraction times (1 and 2 hrs), the heating temperature (60 and 80 ^{o}C). The treatment that gave better performance was characterized physicochemically, based on standard methods to analyze; moisture, ash, metoxyl content, galacturonic acid content, degree of esterification, and viscosity [2].

Results. To evaluate the conditions of extractions the obtained results were analyzed using the SAS program. Showing that the most influential factor in the performance of mucilage obtained was the temperature. The best performance was achieved with the treatment just pH of 2.5, during 2 hours and 80 ºC. Getting 12.21 % of mucilage in cactus dry basis. The table 1 shows the results of the physicochemical characterization, compared with the citric pectin, we observed that the mucilage is low metoxyl (below 7 %) which indicates us that is difficult to gel [3], and in terms of moisture the results are very similar to that of the citric pectin. The rheological results show a behavior very similar to the citric pectin, defining it as a not Newtonian fluid since the viscosity depends on the temperature as this increase the viscosity decreases.

Table 1. Characterization of cactus mucilage compared to citrus pectin

Characteristics	Citrus pectin	Mucilage
Moisture (%)	9.59 ± 0.35	9.06 ± 0.31
Ash (%)	2.41 ± 0.11	18.62 ± 0.10
Metoxyl (%)	8.07 ± 0	4.96 ± 0
Degree of esterification (%)	79.48 ± 1.28	92.27 ± 0.45
Galacturonic acid (%)	94.15 ± 1.37	84.83 ± 0.82

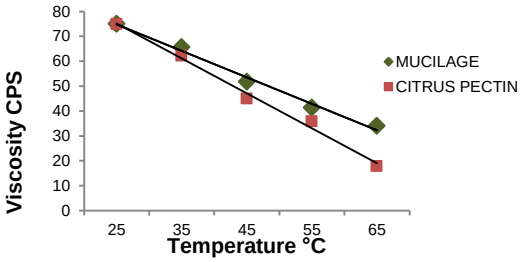

Fig.1 Viscosity curves in function of the temperature comparisons between the citrus pectin and mucilage

Conclusion. The Cactus wastes represent a source for extraction of mucilage which has characteristics similar to that of citrus pectin and has the potential to compete in the food industry.

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