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Characterization of partially hydrolyzed galactomannan from *Caesalpinia pulcherrima* seeds

F.C.A. Buriti^{*1}, K.M.O. dos Santos¹, J.S. Maciel², D.M.A. Teixeira Sá³, R.A. Moreira⁴, A.S. Egito¹
¹*Embrapa Goats and Sheep, Brazil*, ²*Federal University of Ceará, Brazil*, ³*Federal Institute of Education Science and Technology of Ceará, Brazil*, ⁴*University of Fortaleza, Brazil*

A galactomannan extracted from the endosperm of *Caesalpinia pulcherrima* seeds was partially hydrolyzed in order to obtain a potential dietary fiber source, particularly for the production of liquid food products.

The galactomannan of *C. pulcherrima* (GM), obtained by means of separation of the endosperm, water dissolution, precipitation with ethanol and drying, was dispersed in distilled water (1.5 g 100 ml⁻¹) and hydrolyzed using a commercial cellulase from *Aspergillus niger* (12.8U g⁻¹ GM) for 2h at room temperature. Samples were immediately autoclaved (121°C, 20 min), cooled and spray dried. This partially hydrolyzed galactomannan (PHGM) was characterized by gel permeation chromatography, rheology, and also ¹³C and ¹H nuclear magnetic resonance in comparison with its non-hydrolyzed counterpart (GM).

The peak molar mass was 3.4×10^6 g mol⁻¹ and 6.3×10^4 g mol⁻¹ for GM and PHGM samples, respectively. The mannose/galactose ratio was 3:1 and 3.4:1 in GM and PHGM, respectively. These values are in agreement with the molar mass and mannose/galactose ratio early reported for GM.

The absolute viscosity values of aqueous solutions of PHGM at concentrations of 0.1%, 0.3%, 0.5% and 1% were up to 200 fold lower than those obtained for GM at same concentrations and shear rate (from 30 to 1000 s⁻¹). At a shear rate of 800 s⁻¹, GM and PHGM at concentration of 1% presented absolute viscosity of 158 mPa s and 5.65 mPa s, respectively. The solutions of GM and PHGM at 0.1% and 1%, respectively, presented relatively similar values of absolute viscosity at the same shear rate.

These results confirmed the partial hydrolysis of the galactomannan of *C. pulcherrima*, which might be suitable for the production of a dietary fiber ingredient with potential application for use in food products, such as yoghurts and milk fermented beverages.

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