Gastroprotective Effect and Structure of a Rhamnogalacturonan from Acmella oleracea

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INTRODUCTION: The plant Acmella oleracea, known as jambu, is widely used in Brazilian Amazon in folk medicine and local cuisine. This work presents the isolation, structural characterization, and anti-ulcer activity of a polysaccharide obtained from A. oleracea leaves. MATERIAL AND METHODS: Leaves were defatted and depigmented, and the residue was extracted with water under conditions of reflux. The aqueous extract was treated with excess EtOH to provide a crude precipitate of polysaccharides. The latter was submitted to freeze-thawing until no more precipitate appeared, and the soluble portion was treated with HOAc to pH 3.0, resulting in a soluble (SC) and an insoluble fraction. The fraction SC was submitted to HPSEC analysis, monosaccharide analysis, methylation analysis and NMR spectroscopy. RESULTS AND DISCUSSION: SC contained galacturonic acid, galactose, arabinose, rhamnose, and glucose in a 15:2:1:1:0.5 molar ratio and had a $M_w$ of 226,000 g/mol. Methylation analysis and NMR spectroscopy indicated that SC is a rhamnogalacturonan composed of a long chain of $\rightarrow 4$)-6-OMe-$\alpha$-D-GalpA-(1$\rightarrow$, interspersed with some $\alpha$-L-Rhap residues, partly substituted by side-chains of type II arabinogalactans. SC significantly inhibited ethanol-induced gastric ulcers in rats with an $ED_{50}$ of 1.5 mg/kg. CONCLUSIONS: The polysaccharide SC obtained from A. oleracea leaves is able to inhibit ethanol induced gastric lesions, indicating that it could be an effective gastroprotective agent. Moreover, according to the results, A. oleracea could be of pharmacological value.

Keywords: Acmella oleracea, anti-ulcer activity, rhamnogalacturonan

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