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[F.FC.05]

Structural characterization and macrophage immunostimulatory activity of polysaccharides present in the hot water extracts from *Pterospartum tridentatum* dried inflorescences

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The hot water extracts from *Pterospartum tridentatum* dried inflorescences are used in the northeastern portuguese region of Trás-os-Montes due to its therapeutic properties. The therapeutic properties attributed to hot water extracts from plants are often related with polysaccharide macrophage immunostimulatory activity. This work intends to identify the structural features of polysaccharides from *Pterospartum tridentatum* hot water extracts and to evaluate their putative macrophage immunostimulatory activity, which may contribute to their therapeutic properties.

The high molecular weight material from the decoction of *Pterospartum tridentatum* dried inflorescences was sequentially fractionated by ethanol precipitation and anion exchange chromatography. Through sugar and linkage analysis it was possible to detect (1→4)-galacturonic acid residues, diagnostic for the presence of pectic polysaccharides, together with (1→4)-galactose, *t*-galactose, and *t*-arabinose residues, which are all diagnostic for the presence of type I arabinogalactans, known to be linked to the pectic polysaccharides through (1→2,4)-rhamnose residues, which were also detected. Significant proportions of (1→4)-mannose residues, which evidenced the presence of mannans, were also detected in a neutral fraction. ESI-MS and ESI-MS/MS analysis evidenced the acetylation of the mannans detected in the neutral fraction. Residues diagnostic for the presence of xyloglucans were also detected in this neutral fraction.

The influence of the neutral fraction on the macrophage cellular viability and nitric oxide (NO) production was evaluated, evidencing an increase in the production of NO when compared to the control assay, without compromising the macrophage cellular viability. Through alkaline treatment and enzymatic digestion assays, it was possible to show the importance of the polysaccharides present in the neutral fraction and particularly of their acetylation in the macrophage immunostimulatory activity.

Pectic polysaccharides, xyloglucans and acetylated mannans have been referred as possessing macrophage immunostimulatory activity, therefore it seems possible that these polysaccharides present in the *Pterospartum tridentatum* hot water extracts may contribute to their therapeutic properties.

Keywords: *Pterospartum tridentatum* hot water extracts, polysaccharides, mass spectrometry, macrophage immunostimulatory activity