

Agaricus spp. Heterogalactans: Chemical Structure, Anti-inflammatory and Antinociceptive Properties

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Innumerable researches about the therapeutic properties of the mushrooms, especially of their polysaccharides, give rise to a greater interest for those molecules and their benefits. To improve the knowledge in this area, this study aimed to characterize and evaluate the anti-inflammatory and antinociceptive potential of heteropolysaccharides of *A. brasiliensis* and *A. bisporus* obtained by aqueous extractions. From the extracts similar fucogalactans were isolated, EPF-Ab ($M_w=19.4 \times 10^4$ g/mol) and EPF-Ah ($M_w=31.1 \times 10^3$ g/mol), respectively, which have a main chain constituted by units of α -D-Galp(1 \rightarrow 6)-linked, partially substituted in O-2 by non-reducing ends of α -L-Fucp. However, the isolated fraction of *A. bisporus* var. *hortensis* has a main chain partially 3-O-methylated and low contents of non-reducing ends of β -D-Galp (2.5%), which has not been previously described. The heterogalactans were evaluated as potential antinociceptive and/or anti-inflammatory agents. The fucogalactan from *A. brasiliensis* presented an inhibition of 39% (DI₅₀>100 mg/kg) and did not show an anti-inflammatory activity, yet the heterogalactan of *A. bisporus* var. *hortensis* demonstrated an inhibition of 72% (DI₅₀=0.33 mg/kg). Besides the inhibition of the nociception, EPF-Ah inhibited in 61% (DI₅₀=5.0 mg/kg) the number of total leukocytes and in 32% the permeability capillary peritoneal. In agreement with the obtained results, the importance of the chemical characterization of polysaccharides is evident, because similar structures resulted in different answers in relation to the tested activities.

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