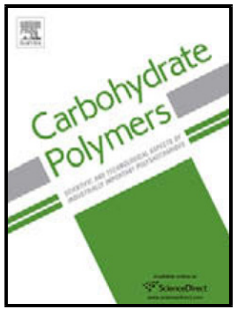

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Cytotoxic effect of a mannogalactoglucan extracted from *Agaricus bisporus* on HepG2 cells

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Highlights

- A mannogalactoglucan (RK2-*Ab*) from *Agaricus bisporus* was structurally characterized;
- The main chain is formed mainly by α-D-Gal*p* and β-D-Glc*p* units (1→6)-linked;
- Main chain is 2-*O*- and/or 4-*O*-substitued by β-D-Man*p* non-reducing end units;
- RK2-*Ab* reduced cellular viability of HepG2 cells;
- Antitumor activity by inducing apoptosis by the mitochondrial death pathway.

Abstract

A mannogalactoglucan (RK2-*Ab;* M_w 1.8 × 10^4 g mol^{-1}) composed by Man (27.3%), Gal (24.4%) and Glc (48.3%) was extracted and characterized from *Agaricus bisporus,* and its biological activity was evaluated on human hepatocarcinoma cells (HepG2). The partially-*O*-methylated alditol acetates together with the NMR data suggest the main chain to be composed of α-D-Gal*p* (32.8%) and β-D-Glc*p* (37.0%) units (1→6)-linked, with β-D-Man*p* (14.6%), as non-reducing end units, substituting the side chains at O-2 (α-D-Gal*p* units; 3.3%) and O-2 and O-4 (β-D-Glc*p* units; 3.6%). (1→2)-linked β-D-Glc*p* (2.7%) and β-D-Man*p* (6.0%) can also be observed. RK2-*Ab* reduced cellular viability of HepG2 cells, by both, the MTT and lactate dehydrogenase release assays, promoted the increase of cytochrome *c* release and decrease of ATP content. Suggesting that