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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  $\alpha$ -D-Galp and  $\beta$ -D-Glcp units (1 $\rightarrow$ 6)-linked;
- Main chain is 2-O- and/or 4-O-substituted by  $\beta$ -D-Manp 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;  $M_w$   $1.8 \times 10^4$  g mol<sup>-1</sup>) 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  $\alpha$ -D-Galp (32.8%) and  $\beta$ -D-Glcp (37.0%) units (1 $\rightarrow$ 6)-linked, with  $\beta$ -D-Manp (14.6%), as non-reducing end units, substituting the side chains at O-2 ( $\alpha$ -D-Galp units; 3.3%) and O-2 and O-4 ( $\beta$ -D-Glcp units; 3.6%). (1 $\rightarrow$ 2)-linked  $\beta$ -D-Glcp (2.7%) and  $\beta$ -D-Manp (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

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