Chemical Proximate Analysis Antioxidant and Immunomodulation Activity of Crude Polysaccharides from blanching water of f

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ABSTRACT

Flammulina velutipes is one of the common edible mushrooms on the market. The mainly edible mushrooms not only have many nutrient but also have high functional and medicinal values. Studies showed that the protein binding polysaccharide of F. velutipes has antioxidant, anti-tumor and immune regulation activities. In this study, investigation of the concentration of polysaccharide in the blaching water prodceeded, nevertheless, antioxidant activity, anti-tumor activity, cytotoxicity and immune activity of F. velutipes polysaccharide were also analyzed. In this study, crude polysaccharide of F. velutipes was extracted from blanching water by ethanolic extraction. It contains many nutrients including carbohydrate (45.95%), crude protein (17.52%), crude fat (1.47%), crude fiber (0.99%) and ash (21.36%). The antioxidant activity on DPPH scavenging ability of blanching water is 33%; crude polysaccharide showed a 46%; As for the ferrous ion chelating ability, blanching water showed a 44% and crude polysaccharide has a ability of 98%. On reducing ability, blanching water has a 0.30, where crude polysaccharide showed a 1.73 at 1mg/mL. FTIR analysis of crude polysaccharide showed it contains β-1,3-glycosidic groups. In cellular toxicity test showed that crude polysaccharide can promote the HPBMC proliferation for the first 24 hours, however, the HPBMC of proliferation was inhibited after 72 hours incubation. The anti-tumor activity with human cutaneous malignant melanoma showed no inhibition of cellular proliferation after 24 hours incubation; crude polysaccharide from multiple numbers of blanching can increase the ablility of suppression of tumor cell proliferation after 72 hours incubation, however, the crude polysaccharide showed no inhibition on human oral cancer cell proliferation. Investigation of crude polysaccharide with HPBMC on the cytokine profile showed that after 24 hours incubation with 0.01～10 μg/mL concentration of crude polysaccharide, highest TNF-α secretion was found (1144 pg/mL), as for 72 hours incubation, TNF-α secretion was dropped to 312～645 pg/mL. Mononuclear cells can be effectively stimulated by crude polysaccharide, the effect is not lower else fungi. The results can improve value of Flammulina velutipes, and the crude polysaccharide can replace synthetic antioxidants. Delop value-added waste water recycling plants and environmental.

Keywords : Flammulina velutipes、blanching water、polysaccharide、antioxidant、immunomodulation、chemical proximate

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