

Antitumor activities of spray-dried powders with different molecular masses fractionated from the crude protein-bound polysaccharide extract of *Agaricus blazei* Murill

Abstract

In this study, we first prepared 3 kinds of powders with different molecular masses from the crude protein-bound polysaccharide extract of *Agaricus blazei* Murill through ultrafiltration, followed by spray-drying. Then, the antitumor activities of the powders were analyzed. Size exclusion chromatography coupled with a multi-angle laser-light-scattering system showed the 3 powders had the following molecular ranges: below 10 kDa (SD-1), 10 to 150 kDa (SD-2), and above 150 kDa (SD-3), representing peak molecular weights of 8.26×10^3 , 9.65×10^4 , and 5.94×10^6 g/mol, respectively. All the powders stimulated macrophage RAW264.7 cells to produce nitric oxide, of which SD-2 and SD-3 were superior to the crude extract powder (CP-SD), while SD-1 showed the lowest activity. Similar results were found for their cytotoxicities against human cancer cell lines (A549, MCF-7, and AGS), where the highest activity was obtained with the SD-2 treatment for 72 hr at 1,000 μ g/mL. The MCF-7 cell line was less sensitive to the powders than the other cells. From this research we found that ultrafiltration, in combination with spray-drying, is applicable for preparing protein-bound polysaccharide powders with higher antitumor activities. © The Korean Society of Food Science and Technology.