

Optimization of Liquid Culture Conditions for the Production of Polysaccharides by *Agaricus blazei* Murr.

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The mushroom *Agaricus blazei* Murr. is a fungus native to Brazil. Its bioactivity has been the subject of research in Japan and its reported medicinal properties arise from the presence of, for example, polysaccharides contained within the fruiting bodies, mycelia, and liquid culture filtrates. These polysaccharides have demonstrated antitumor properties, although other reported bioactive properties include the stimulation of the immune system and antibacterial activity.

The process of solvent extraction has isolated the polysaccharides, found either alone or with an associated protein component. Research to date has focussed on the method of extraction of polysaccharides from the *A. blazei* fruiting bodies;

however, little work has documented studies on the optimization of liquid culture growth conditions with a view to maximizing the production of these polysaccharides.

The current research reports the importance of temperature, pH, and liquid culture medium on the *A. blazei* biomass production, and ultimately the yield of polysaccharides produced in both the mycelial biomass and the liquid culture medium. Growth substrate relationships have been considered, and the molar mass range of the resulting polysaccharides has been measured and compared to those polysaccharides with demonstrated antitumor activity. The antibacterial activity of the extracted polysaccharides was also investigated.