

SELECTION OF CONDITIONS FOR SUBMERGED CULTIVATION OF *PLEUROTUS OSTREATUS*

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Abstract

The object of our research was the culture of *Pleurotus ostreatus*. In our previous studies hypolipidemic, hypocholesterolic, immunomodulating, hypoglycemic actions of *P. ostreatus* were demonstrated. Also *P. ostreatus* is known for its: antitumour, anti-inflammatory, antioxidant, antibiotic and radioprotective actions. A special attention should be paid to beta-glucans, which are structural polysaccharides of fungal cell walls and are demonstrating significant biological activity. They are suitable candidates for research and development of new functional foods and nutraceuticals. Beta-glucans, isolated from basidiomycetes, are of considerable interest due to their various useful preventive and functional properties to widely used ordinary food products. The aim of this study was to select the conditions for submerged cultivation to obtain the highest yield of biomass of *P. ostreatus*.

The submerged cultivation was carried in Erlenmeyer flasks on rotary shaker. Various sources of carbon: rye whole grain flour, medium rye flour, light wheat flour, dark wheat flour, corn flour, potato starch, soy flour and sources of nitrogen: carbamide, NaNO₃, NH₄NO₃, (NH₄)₂SO₄, soy flour were used in the semisynthetic nutrient medium. Also, the growth of *P. ostreatus* was studied on various initial pH values and for different dissolution rates of oxygen in the culture medium. Aeration rate was determined by the sulfite method.

As a result, the high aeration levels (3.3-4.0 g O₂/(L·h);) were selected for cultivation. The initial pH value of the culture medium 7.5 is preferable to the lower values. Medium rye flour or dark wheat flour as a source of carbon and soy flour as source of nitrogen provided the highest yield of *P. ostreatus* biomass were selected.

Submerged biomass of *P. ostreatus* can be used for obtaining beta-glucan preparations as functional supplement for fortification of dairy products and other ordinary food products.

Key words: *Pleurotus ostreatus*, β -glucans, Submerged cultivation, Sources of carbon, Sources of nitrogen, nutrient medium.