

Influence of Mineral Elements on the Mycelial Growth and Their Uptake by *Pleurotus ostreatus* (Jacq.: Fr.) Kumm. Biomass

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Modern methods of investigation have made it possible to discover the role of metal ions in higher mushroom physiology, and to establish an association between the mushroom species and specific features of uptake of some mineral elements required for growth and development. Studies on the mineral composition of wild and cultivated medicinal mushrooms are of great significance for the determination of levels of biomass saturation with valuable micro- and macroelements. In combination with a higher content of vitamins, enzymes, and other biologically active substances a balanced content of mineral elements significant for life processes may potentially improve the pharmacological effects of this medicinal mushroom preparation.

To determine the influence of mineral additives (FeSO₄, CoCl₂, and Cu citrate in various concentrations), mycelial disks of *Pleurotus ostreatus*, 0.5 cm in diameter, were grown in pure culture in 6° beer wort with appropriate additives at 26°C in 250-mL glass vessels. The biomass was separated from the nutrient medium, dried at 105°C to obtain absolutely dry mass, weighed,

and the content of mineral elements measured using photometric techniques.

During the addition of 1% FeSO₄ a maximum biomass output was observed, while the level of iron accumulation was 1398 µg/g d.w., and during the addition of 2%, 1867 (453 µg/g in the control). An increase in the concentration of applied solution considerably reduced the mycelial growth. A 0.4% concentrate of CoCl₂ (9×10^{-4}) solution stimulated mycelial biomass growth; however, the maximal cobalt uptake occurred during the 10-fold increase in concentration—67.6 µg/g (3.48 µg/g in the control). Addition of Cu citrate (4×10^{-4}) to the liquid nutrition medium during the *P. ostreatus* mycelial culture growth showed a positive effect on the biomass increase at concentrations of 0.2–2%. The maximal copper uptake was observed at 10% concentration—497 µg/g (26.6 µg/g in the control).

Optimization of growth parameters in combination with a balanced uptake of required mineral elements will allow improvement of essential dietary supplements, obtained from medicinal mushrooms cultivated on liquid nutrient media.