Culinary–Medicinal Mushrooms Affecting the Development of Adipose Tissue Development in Rats and Depending on the Growth Conditions for Their β-Glucan Production

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Two different studies have been conducted, and the results are compiled herein. First, genetically homogenous rats were used for investigation of the effect of the most commonly cultivated mushrooms on their plasma lipids and adipose tissue localization. Therefore, the rats were randomly divided into five groups of six individuals and subjected to commercial rodent fodder or the same fodder supplemented with 5% (DW/ DW) oat flower, shiitake (*Lentinus edodes* (Berk.) Singer), button mushroom (*Agaricus bisporus* (J.Lge) Imbach), or blue oyster mushroom (*Pleurotus ostreatus* (Jacq.: Fr.) P. Kumm.) with free access to water and dry food for 8 weeks. The plasma LDL, HDL, and total cholesterol levels were measured with the Technicon RA-XT analyzer. Distribution of adipose tissue was determined. All non-intramuscular adipose tissue was dissected and weighted, and subcutaneal, intraperitoneal, mesentery, and interscapular adipose tissue measured. The group fed with shiitake had the lowest plasma lipid levels. Shiitake and blue oyster mushroom had the most profound affects on the accumulation and localization of adipose tissue. Possible explanations are discussed.

In a second study, six *Lentinus edodes* and four winter mushroom (*Flammulina velutipes* (W. Curt.: Fr.) Singer) strains, varying by their optimal substrate preference, were cultivated in Petri dishes during the vegetative phase in order to investigate the effect of pH and substrate composition on their mycelia performance and β-glucan production. Substrate was either the most commonly used MYPA with malt and yeast extract, or peptone or MYPA with $CaSO_4$. The vegetative growth speed was monitored by measuring the daily radial growth. After mycelia reached the dish margin, the pH of the substrate was measured, the biomass of mycelia weighted, and β-glucan content analyzed. Marked statistical differences were discovered between strains and substrates in growth speed, biomass production capabilities, post-growth substrate pH, and β-glucan content. According to these findings, it is possible to modify the functional quality of *Lentinus edodes* and *Flammulina velutipes*.