

Mushroom-Based Biologically Active Substances

Tamara V. Teplyakova

Siberian University of Consumer Cooperation, 26 Karl Marx Prospect, Novosibirsk 630087, Russia

Microelements play one of the leading roles in all hormone and fermentation processes in the human body. Iodine, manganese, zinc, molybdenum, selenium, and many others are among those of vital importance. Iodine, zinc, and manganese are essential, for example, for the thyroid gland's function in enabling all the organs, including the brain, to function normally.

In Russia much attention is paid to brown sea alga as a source of organic iodine as well as other microelements. However, according to the data available today, the alga can contain increased concentrations of heavy metals such as cadmium and arsenic, so the raw materials and processing technologies used in the production of biologically active dietary supplements must be constantly tested for their ecological purity.

It is known that edible mushrooms can be consumed both as full value foods and as material for derived preparations having therapeutic or preventive effects. In view of the above observations, careful consideration is given to cultivated mushrooms including oyster mushrooms [*Pleurotus ostreatus* (Jacq.: Fr.) Kumm.].

We found the fruiting bodies of oyster mushrooms to contain 44 microelements. Under the

control of cultivation one can make use of the accumulating ability of mushrooms to build up valuable elements. Our investigations have shown that adding iodine, zinc, and manganese sources to plant substrate allows one to effect a rise in the level of these elements: of iodine by 14.4 and of zinc and manganese by 16 as compared to control. The availability of additional valuable components in *Pleurotus ostreatus* (e.g., essential amino acids, dietary fibers, vitamins) advanced its prospects as a promising means to produce mushroom-based biologically active substances. In this production both the fruiting bodies of mushrooms and the mycelia of submerged culture can be used, provided the latter are microscopically tested and periodically reproduce fruiting bodies. This is required because, as a result of the mycophilia phenomenon, in the mycelia of Basidiomycetes mushrooms other fungal species can exist for a long time, for example, those of the *Verticillium* and *Cephalosporium* genera. Our investigations have shown that under conditions of submerged culture these mycophilous fungi have some advantages in their development.