

Study of Edible and Medicinal Mushroom Viral Diseases

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In this report the cultivation of healthy mushrooms using biotechnological processes and the circulation of pathogenic viruses in natural ecological niches are discussed. For long-term research five strains of mushrooms of the genus *Agaricus* [*A. bisporus* (J. Lge) Imbach—4, 36; *A. arvensis* Schaeff.—14; *A. campestris* L.: Fr.—144; *A. bitorquis* (Quél.) Sacc.—285), and *Pleurotus* (*P. ostreatus* (Jacq.: Fr.) Kumm.) were used. It is shown that *Agaricus*, which is cultivated using special technologies, is especially sensitive to viruses.

Our findings, in biotechnological centers of Ukraine, on the problem of infected *A. bisporus* show that the disease brings about small fruiting bodies that are often waterlogged and dark brown.

Mushroom (*Agaricus bisporus* and *Pleurotus ostreatus*) viruses can be spread from crop to crop in two basic ways.

Three morphological groups of viruses from *Agaricus* are described: rodlike (150–295 × 18 nm), bacillar (18 × 52 nm), and “spherical” (32 nm). Viruses are identified as in mycelium (sowing material) and in fruiting bodies. In some strains of *Agaricus* they reduce a crop by 1.5–3 times. The sensitivity of plants to the rodlike

virus, which by electron microscopy, Uhterloni diagnostics, IFA, was identified also in soil and feces of animals, is investigated. For diagnosis of viral diseases of *Agaricus* a key circuit is developed that includes an estimation of diseases in mycelium and fruiting bodies of mushrooms by visual inspection and modern tests.

It is shown that certain homogeneous fractions of *Agaricus* have a stimulating action on agricultural plants.

It is demonstrated that *Pleurotus* mycelium and fruiting bodies are sensitive to the quality of nutrient environments, such as compost. For formation of the latter it is necessary to select grain and straw undamaged by chemical weed killers, to support a light and temperature mode. *Pleurotus* can catch a virus of “spherical” morphology.

As research has shown, for *Agaricus* and for *Pleurotus* the mixed infections of viruses, bacteria, and microscopic mushrooms are especially harmful.

On the basis of the results of experience, a technology of cultivation of healthy mushrooms is offered that includes preventive methods and economic parameters in all processes.