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Physiological Activity of Basidiomycetes Fruiting Body Extracts

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Preparation of drugs that improve immune system functioning in humans is the most advanced field of investigation and application of Basidiomycetes metabolites. However, it is well known that Basidiomycetes produce phytohormonal substances, which are characterized by diversified physiological activity.

Our task was to study the physiological effects of extracts produced from fruiting bodies of Basidiomycetes *Pleurotus ostreatus* (Jacq.: Fr.) Kumm. and *Lentinus edodes* (Berk.) Sing.

Extract cytogenic activity was tested using seeds of pea var. Pionersky. Alcohol, aqueous, and ethyl acetate extracts were obtained from mushroom powder made from *P. ostreatus* and *L. edodes* fruiting bodies. After 48-, 60-, and 72-hr germination the roots were fixed with Karnua fixer and colored according to the Pholgen method. Mitotic activity and frequency of chromosome damage were studied using pressed preparations from pea root meristem and analysis of the number of aberrations in pea meristem cells at the ana- and telophases of mitosis.

All extracts studied exhibited physiological activity but the nature of their effects differed. Thus, regardless of extraction substances, a stimulating effect on cell division and root growth was produced by extracts made from *P. ostreatus* fruiting bodies and no mutations in the root meristem occurred. As compared to controls, some reduction in the level of chromosome damage in the pea meristem tissue as a result of the action of 10% alcohol and ethyl acetate and 1% aqueous extracts was observed.

The effect of the aqueous extract prepared from *L. edodes* fruiting bodies at the initial germination stages was of an inhibitory nature and after 72 hr its action was stimulating. The mitotic activity was characterized by a 1.5–2-fold increase. Results have shown that the *P. ostreatus* fruiting body extracts studied stimulate cell division and reduce the frequency of emergence of cells with chromosome aberrations. The applications of *L. edodes* alcohol and ethyl acetate extracts resulted in some heightening of the mitotic activity, but in parallel some insignificant increase in the quantity of aberrant cells occurred.

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