

Modification of Growth Parameters of *Pleurotus ostreatus* (Jacq.: Fr.) Kumm. Caused by Gamma-Irradiation

Anna A. Grodzinskaya¹ and Alexander N. Mikheev²

¹N. G. Kholodny Institute of Botany, National Academy of Sciences of Ukraine, 2 Tereshchenkivska Str., Kiev 01601, Ukraine, and ²Institute of Cell Biology and Genetic Engineering, National Academy of Sciences of Ukraine, 148 Zabolotnogo Str., Kiev 02143, Ukraine

The influence of ionizing radiation on biological objects is of great interest not only from the standpoint of their damage as a result of anthropogenic contamination of the atmosphere with radioactive materials but also in terms of understanding mechanisms of radiation action on living organisms with the aim of obtaining radiostimulating effects. Radiation mutagenesis is widely applied in selection. Moreover, the observed systematic nature of responses to radiation gives evidence of their influence on many aspects of organism activities. Studies were carried out on strain 420 of *Pleurotus ostreatus* (culture collection of the KW, Kiev). Gamma-irradiation was emitted by the cobalt unit "Issledovatel." Mycelial disks, 1 cm in diameter, located in the centers of Petri dishes on a nutrient medium (wort agar) were treated with radiation at doses of 25, 100, and 200 Gy with intensity of radiation of 5.4 Gy per second. Further cultivation was done at 26–26.5°C; measurement of colony diameters and density estimation were carried out every 3 days. A pretreated mycelium and a control were used for inoculation of sterilized substrate (saw-

dust, millet, and coffee residues at the ratio of 70%:25%:5%) to check the capability of fruiting body formation.

The data obtained indicate that an increase of irradiation dose leads to some decrease in the rate of growth of the mycelium. However, the mycelium density increased in parallel with the emergence of clear concentricity in treated samples. Every treated sample showed an increased growth activity that resulted in some increase in the fruiting body mass. In cases of minimum (25 Gy) and maximum (200 Gy) doses of irradiation, some acceleration (3–5 days earlier) of primordium formation was observed. It should be noted that the presence of two ranges of stimulating doses might give evidence of two mechanisms of radiostimulation, most probably related to various metabolic processes such as reparation processes or acceleration of vegetative growth. The results again confirm that irradiation modification of growth and morphogenetic activity in cultivated *P. ostreatus* may be applied to stimulate fructification and/or to obtain some useful features.