

EFFECT OF GAMMA RADIATION ON GRAPE SNAILS (*Helix pomatia*)

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We are conducting research in the field of studying the influence of various stress factors on living systems. The study of paramagnetic centers in different plant species showed that under stress, they develop new magnetic properties [1,2]. Similar results were obtained in studies with animal organisms [3]. Using the electron paramagnetic resonance (EPR) spectroscopy method, we found that exposure to ionizing gamma radiation up to certain doses leads to the appearance of new magnetic properties in them. Shell and body parts of control snails and those irradiated with different doses of gamma radiation (100 Gy, 200 Gy, 300 Gy, 400 Gy, 600 Gy, 800 Gy) were examined separately.

Identification of the EPR spectra of the studied objects in a wide magnetic field (500-5500 Gs) showed that irradiation with gamma radiation leads to the appearance of wide EPR signals characterizing the iron oxide magnetic nanoparticles ($g=2.32$; $\Delta H=400$ Gs). It has been established that the intensity of the signal characterizing the magnetic iron oxide nanoparticles recorded in body parts of snails is higher than in the snail shell.

It also turned out that with an increase in the radiation dose, an increase in the amplitude of the characteristic broad EPR signal is observed.

Depending on the dose of influencing radiation, we established a linear increase in free radical signals ($g=2.0023$) in the area of the body and shell of snails and a nonmonotonic change in the amplitude of the broad EPR signal ($g=2.32$) characterizing magnetic nanoparticles. The obtained results show that grape snails can be used as a bioindicator in the study of the ecological state of the environment.

References.

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