

PRECLINICAL STUDIES OF GLYPHOSATE UNDER THE INFLUENCE OF FEMALE QUAILS

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The determination of acute pesticide toxicity is intended to provide primary information on the hazard of the test substance. Therefore, the purpose of our work was to determine the acute toxicity of glyphosate on the quail model. Glyphosate is a herbicide with a wide spectrum of activity. In Ukraine, the annual use of glyphosate-based herbicide preparations is 1-1.5 thousand tons. The use of glyphosate on cereals, maize, sunflowers, soybeans can cause it to get into plants and from there into feed for farm animals, in particular poultry (Kuznetsova et al., 2010).

Materials and methods of research. Glyphosate in the formulation of a potassium salt in the concentration 676 g/dm³ was used in the experiments. The experiments were performed on 91 female quails with an average mass of 200.0 ± 20.0 g, which were maintained in optimal vivarium conditions. The birds had free access to water and feed. Determination of the dose range for the main experiment was performed in the previous experiment. According to the principle of analogues, 4 experimental groups were formed, which were administered glyphosate in the form of an aqueous emulsion in doses of 50, 500, 2000, and 5000 mg/kg body weight. In the main experiment were formed, on the principle of analogues, 7 experimental groups of poultry with such doses - 3500, 4000, 4500, 5000, 5500, 6000 and 6500 mg/kg body weight and two control groups. Each group had 7 quails (n = 7). The experiments were carried out in accordance with existing regulations (Council Directive 86/609 / EEC of 24 November 1986 on the approximation of the laws, regulations and administrative provisions of the Member States concerning the protection of animals used for experimental and other scientific purposes // Official Journal of the European Communities L 358, 1–29), which regulate the organization of works using experimental animals and compliance with the principles of the “European Convention for the Protection of Vertebrate Animals Used for Experimental and Other Scientific Purposes” (Strasbourg, 1986). The clinical condition of the experimental birds was monitored 14 days. We registered the emergence and development of clinical signs of poisoning, the timing of death or recovery to normal. After the death of the birds, a pathoanatomical section was performed. Macroscopic subjective research was used to establish pathologic anatomical changes (Zharov et al., 2003).

Results of the study and their discussion. In a previous experiment, clinical observations showed that a single intragastric administration of an aqueous glyphosate emulsion of quail I - III of the study groups did not produce a pattern of acute poisoning. The birds were active, responded well to external stimuli, actively consumed feed and water. In the bird IV of the experimental group during the first six hours of the experiment registered the gradual development of suppression.

Poultry death was registered in this group during the first day after glyphosate administration. In the main experience during the observation of the quails of the first experimental group did not note the pattern of acute poisoning. The bird was active, responded well to external stimuli, actively consumed feed and water.

During the first three hours of the experiment, the birds of the experimental groups III and VIII showed gradual development of inhibition. Noted a weak reaction to external stimuli, the birds were sitting in one place. Death of poultry was observed during the first day after glyphosate administration. The quails that remained alive during the first day observed general depression, lack of appetite. On the second day, gradual normalization of the general condition of the birds were revealed. On the third day the quails showed no signs of poisoning, and in the following days their general condition did not differ from that of the control group birds.

After the death of the birds, a pathoanatomical section was performed. Appearance of poultry carcasses before section: changes in visible mucous membranes and feather cover were not observed. The autopsy revealed no changes in the oral mucosa, pharynx and esophagus; liver enlarged, blood-filled, dark-cherry color, gallbladder filled with bile, vessels of the small intestine blood-filled, noted swelling of the blind processes of the large intestine; kidneys increased in volume compared to the control group.

As results, clinical symptoms of acute glyphosate poisoning of quails are manifested by depression, low responsiveness to external stimuli, sitting in one place. Pathological anatomical picture in conditions of acute poisoning with glyphosate is characterized by such changes as dark-cherry color and enlargement of the liver, blood filling of the vessels of the small intestine, swelling of the blind processes of the large intestine; an increase in kidney volume compared to control.