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TOXICOLOGICAL CHARACTERISTICS AND LIMITLY - PERMISSABLE CONCENTRATION IN WATER OF RESERVOIRS OF THE FUNGICIDE KRESOXIN

Abstract: *the fungicide according to the parameters of acute toxicity belongs to the IV class of danger, causes weak irritation of the mucous membranes of eyes; does not irritate the skin. Preparation has a weak cumulating of a functional nature. The limit of permissible concentration of the preparation in the water of reservoirs is 0.01 mg / l.*

Key words: *toxicity, dose, concentration, water of reservoirs, skin, mucous membranes of the eyes, experimental animals.*

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Introduction

The discovery of pesticides is an eminent of modern science. Their use helps to prevent crop losses from pests, diseases and weeds [10]. However, pesticides, being in nature as biologically active matters, can affect to human health [5,7].

Kresoxin 50% w.s.g. (water-soluble granules) - fungicide, bactericide, it is an effective under applying on wet foliage against scab, powdery mildew of soot fungi. Aggregate state - granules, dark - brown of color, with a weak-sulfuric smell.

In accordance with the law of the Republic of Uzbekistan “On the sanitary-epidemiological well-being of the population”, in the article of 21 was shown, that all chemical matters are allowed to be imported and produced after toxicological and hygienic assessment [1].

Materials and methods.

The study of the toxicological evaluation of the preparation was carried out in accordance with the “Methodology of complex and accelerated rationing of pesticides in the environment objects” [3]; toxicity classification was determined according to the “Hygienic classification of pesticides by toxicity and hazard” [4].

Research results.

Toxicological characteristics of the preparation: in order to establish a medium-lethal dose of the preparation, researches were conducted on white rats (2). The animals were given the preparation in doses from 3000.0 to 7000.0 mg / kg. Medium-lethal dose of the preparation was calculated by the method of least squares and it was established in the level of 6100.0 mg / kg on animal weight. In toxic doses, the clinic of intoxication was resulted in an increasing of mover activity, the animals were become wet, clustered in the corner of the cage, and there was a

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disturbance of movement coordination and respiration. The death of animals was observed in the period of 2 days.

The study of irritant action on the mucous membranes of the eyes, research was conducted in experimental animals that in guinea pigs [6]. In the right eye of the animal, a single inoculation of the preparation in the form of gruel was held. The left eye served as a control. After injection of the preparation, it was noted scratching with paws of an experienced eye, and around the eye the wool was colored with light brown. In an hour after introduction, the following signs of irritation were noted: slight reddening of the conjunctiva, tearing. After 4 hours, the signs of irritation decreased. A day later, there were no signs of irritation. The above information allows us to conclude about slightly irritating effect of the preparation on the mucous membranes of the eyes.

We studied the skin-irritating effect of the preparation in white rats. On the shaved skin in the abdomen, we put the preparation in the form of gruel. After 4 hours of application, the preparation was washed out with running water, after which observations were made at the experimental plots. On the experimental plots of experimental rats, immediately after the removal of the preparation, there was a slight color of the experimental plots due to the color of the preparation. After 24 hours from the beginning of the experience, no signs of skin irritation were noted, this indicates that the preparation does not cause skin irritation.

The cumulative properties of the preparation were studied in the condition of a sub-acute experiment. The experiment was carried out on white rats, by weight of 150-170 grams, both genders, which were divided into 2 groups. The first group received the preparation in a dose of 1/10 LD₅₀, the second group served as a control. During the experiment, we conducted observation for the state and death of animals, and at the same time we studied the biochemical blood indicators. On the base of received data, it can be concluded that the preparation has a weak functional cumulating.

The study of the chronic toxicity of the preparation, by using the methods of mathematical modeling, it was allowed to establish the threshold and maximum inactive doses of the preparation at level of 15.0 and 1.5 mg / kg. On the base of maximal - inactive doses, the allowable daily dose for a human at the level of 3.0 mg / human / day has been calculated and scientifically based.

Many chemicals of applying in agriculture, when released into the water, the organoleptic properties of water can be worsening by giving it an unpleasant smell and taste [8.9].

It is established, that the preparation gives a specific smell, taste and color (light brown color), when it released into the water. The study of the

effect of the preparation on the organoleptic properties of water, it was carried out with concentrations from 0.1 to 10.0 mg / l. According to the majority of odorants, the smell perception of threshold (1 point) is equal to 0.5 mg / l under 20 ° C; the practical threshold is 1.0 mg / l. The results of statistical processing showed that the threshold perception of smell is 0.40 mg / l; the practical limit is 0.80 mg / l. The results of the conducted experiment showed that threshold sensation of the taste according to the majority of tasters is at a level of 1.0 mg / l, a practical limit is 2.0 mg / l. We should give attention, that preparation gives a brown color in the water, by setting of the threshold concentration on the influence to the color of water, we performed by consecutive dilutions of the initial solutions with different concentrations of the substance. By dilution, the concentration of the preparation was established, which did not give a color in the water that was visible in the column with a height of 10-20 cm (using the Genera cylinders), which turned out to be equal to 0.01 mg / l.

Thus, the study of the influence of the preparation to the organoleptic properties of water, it was established that the limiting sign of harm is the influence of the preparation to the color of water; the threshold is about 0.01 mg / l.

Under the studying of the preparation influence to the dynamics of BOD (biochemical oxygen demand) series of experiments with concentrations of 0.01; 0.1 and 1.0 mg / l were conducted. A concentration of 0.01 mg / l did not cause changes in the BOD, and a concentration of 0.1 mg / l caused an increase in BOD by 10-14%, which was adopted for the threshold on influence to BOD. At the above concentrations, we studied the influence of the preparation on the processes of the second phase of mineralization, the pH of the water, and the death of the saprophytic flora. It was established that the preparation does not show a significant influence to the processes of ammonification and nitrification, as well as to the dynamics of the development and dying off saprophytic flora, in a threshold concentration on the influence to the biochemical oxygen consumption.

Thus, on the basis of the conducted researches, taking into account the data of the sanitary-toxicological experiment, the LPC of the preparation in the water of reservoirs at the level of 0.01 mg / l is recommended (the limiting sign of harm is organoleptic).

Conclusion

On the basis of conducted experimental researches, it was established: Kresosxin 50% w.s.g.

Research was established: according to the parameters of acute toxicity, the preparation belongs to the IV hazard class (according to SanRaR (sanitary rules and regulations) No. 0213-06), under

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eye contact, it causes weak irritation of mucous membranes of the eyes; does not irritate the skin. The preparation has a weak cumulation of a functional nature. As a result of experiments on the study of chronic toxicity of the preparation, the threshold and maximal-inactive doses were established on the basis of which the permissible daily dose for a human at the level of 3.0 mg / human / day was calculated and scientifically based.

The complex of research allowed to recommend the hygienic standards and regulations for the use of the preparation: the LPC of the preparation in the water of reservoirs is 0.01 mg / l, the LPC of the preparation in atmosphere air is 0.5 mg / m³, the LPC

of the preparation in air of the working area is 5.0 mg / m³, maximum allowable level in apples is 0.05, EPC (estimated permissible concentration) in the soil is 0.7 mg / kg. Sanitary - protective zone is 100 meters. Time of work is 5 days.

Thus, the fungicide Kresoxin 50% w.s.g., that it can be recommended for use in agriculture of the Republic with the obligatory observance; and it involves all precautionary measures, when we work with pesticides; consumption rates and developed hygienic standards and regulations for safe use are demanded.

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