

STUDY OF THE MUTAGEN PROPERTIES OF THE DISINFECTANT ON THE BASIS OF POLYHEXAMETHYLENE GUANIDINE SALTS

I. M. Kyshnir, G. V. Kolodiy, V. I. Kyshnir

State Scientific Research Control Institute of Veterinary Medicinal Products
and Feed Additives,
11, Donetska str., Lviv, 79019, Ukraine

Today, in practice of veterinary medicine of Ukraine have been introduced a large amount of disinfectants, but their application is not always effective. It is connected, first of all, with rapid adaptation of microorganisms to the action of the drug, their toxicity and allergenicity. Therefore, when choosing a disinfectant, the attention should be paid not only to its effective antimicrobial action, but also to the potential toxicity for macroorganism. In connection with that, there is an urgent need in searching of new, effective and safe disinfectants.

Therefore, a special attention deserve the means, which are made based on compounds of guanidine, in particular polyhexamethylene guanidine (PGMG), which have high antimicrobial, antifungal and antiviral activity.

The article present the results of the determination of mutagenic action of the disinfectant "Valeus-B", which was made on the basis of polyhexamethylene guanidine salts. In result of the conducted researches, it was found out, that disinfectant in concentration of 0,12 mg/kg of body weight, in peripheral blood of white rats, on the 24, 48 and 72 hours of experiment, did not cause significant changes in number of the micronucleus in polychromatophilic erythrocytes, in comparison with the values of the control group. In determining of the mutagenic action of the disinfectant "Valeus-B" on the induction of sperm heads abnormalities in mice, it was found out that the use of the test substance in concentration of 0,12 mg/kg of body weight did not cause significant changes, whereas the use of disinfectant in concentrations, respectively, 0,6 and 1,2 mg/kg body weight, caused a significant an increase in an amount of split of acrosome the part of sperms head, and also to the increase the number of sperms with reduced and enlarged heads.

Consequently, the use of Valeus-V in a concentration of 0,6 mg/kg of body weight after 24, 48 and 72 hours of the experiment caused to a likely increase of micronuclei in polychromatophilic erythrocytes, respectively in 1,5, 1,5, 1,3 and in the concentration of 1,2 mg/kg body weight, respectively, on 2,3, 2,2, 1,9 times.

The use of disinfectant "Valeus-B" by the concentrations of 0,6 and 1,2 mg/kg body weight causes a change in the morphology of sperms of mice, which was manifested by decrease in size of sperm heads, respectively, in 2,2 and 4,1 times, and an increase in sperm heads , respectively, in 1,7 and 2,5 times, in comparison with the animals of the control group.

Keywords: MUTAGENIC ACTION, INVESTIGATED PRODUCT, CONCENTRATION, SPERMS SPERMIC, ERYTHROCYTES, MICRONUCLEUS.