GEFAHRSTOFFE UND BIOMONITORING

P015

Influence of Electromagnetic Radiation on Animal Spermathogenesis in Conditions of Cold Stress

Zavgorodnii I[1], Litovchenko O[1], Kapustnik V[1], Böckelmann I[2]

[1]Kharkiv National Medical University, Kharkiv; [2]Bereich Arbeitsmedizin, Medizinische Fakultät der Otto-von-Guericke-Universität Magdeburg

Numerous studies show that the combined effect of factors of a diverse nature is significantly different from their isolated one. Taking into account the wide use of industrial technologies and household appliances, which is accompanied by the generation of electromagnetic radiation (EMR), the potential possibility for its influence on the human body in everyday life and at work, as well as the susceptibility of the human body to positive cold temperatures during the cold season, in geographic regions with a cold climate, we chose the combination of EMR and a positive low temperature for the experimental study.

The purpose of our research was to study the nature of morphofunctional changes of the reproductive function in laboratory animals under the conditions of the combined effect of EMR and a positive low temperature.

The experiment was being carried out during 30 days on 30 mature male rats. The animals were divided into 3 experimental groups of 10 rats in each: the first group of animals was subject to a combined effect of EMR and a positive low temperature; group 2 was under conditions of isolated exposure to a positive low temperature; group 3 – the control group – was in comfortable temperature conditions. To reveal morphological changes, the material was fixed in a 10 % aqueous solution of neutral formalin, subjected to alcohol and paraffin processing, sections 4–5 µm thick were made. The visual preparations were stained with hematoxylin and eosin. Studies of microscopic preparations were carried out using microscope "Olympus" BX-41.

In the morphological study of testes in the animals subjected to a combined effect of EMR and a positive low temperature, we have established changes in the histological structure of the seminal glands, which indicate a loss of spermatogenic function.

The results of the experiment showed that when comparing the isolated effect of a positive low temperature and its combination with EMR, it was the influence of EMR, which resulted in the disorder of spermatogenesis in laboratory animals, according to the criterion of the morphological structure of the testes.