

UDC 577.192.619

CHANGES OF THE PERFORMANCE PARAMETERS OF THE HEART OF RATS FOR ARTIFICIAL HYPOBIOSIS

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Introduction. One of the important issues of today is the search for alternative methods of anesthesia. One of these methods is the state of artificial hypobiosis. Mandatory conditions for the creation of an artificial carbon dioxide hypobiosis along with hypoxia and hypothermia are hypercapnia.

One of the most important indicators of the functional state of the heart is the condition of the macro- and micronutrient composition. The purpose of the study was to investigate changes in the elemental composition of the rat heart in the state of artificial hypobiosis compared with the control.

Methods. Experiments were conducted in accordance with the requirements of the "European Convention for the Protection of Vertebrate Animals Used for Experimental and Other Scientific Purposes" (Strasbourg, France, 1985), on the general ethical principles of experiments on animals adopted by the First National Congress of Bioethics in Ukraine (2001). In experiments, white non-bred male rats weighing 180-200 g were used, which were maintained under standard vivarium conditions. The animals were divided into groups: control (intact animals) and experimental group (state of artificial hypobiosis). The number of animals in each group is $n = 8$. Measurement of the content of macro- and

micronutrients was carried out using a mass spectrometric ionization method in inductively coupled plasma on an IRIS Interband II XSP device manufactured by Thermo Scientific, USA.

Results. The trial showed a decrease in the calcium content in the heart of rats in the state of artificial hypobiosis. Its decrease in the hypopoietic state is explained by inhibition of the activity of enzymes and slowing down the frequency of muscle contractions. At the same time, in the state of artificial hypobiosis, the content of such elements increases: Potassium, Sodium, Ferum.

Conclusions. The study of the role of the micro-macronutrient composition is necessary in order to understand the ways of adapting mammals to low temperatures, as well as finding ways to support long-term and safe hypobiosis. Other macro- and trace elements do not change in conditions of hypobiosis, which is quite positive, since this condition does not cause a significant change in the homeostasis of a living organism.

Acknowledgement. I express my sincere gratitude to Prof. L.G. Kalachnyuk, Dr.Sc. in biology, I would like to thank for the planning and analysis of the conducted research Prof. D.O. Melnichuk, Dr.Sc. in biology.