

**MORPHOLOGICAL INVESTIGATION OF ADRENAL GLANDS AFTER  
EXPOSURE TO ELECTROMAGNETIC RADIATION AND POSITIVE LOW  
TEMPERATURE**

**МОРФОЛОГІЧНЕ ДОСЛІДЖЕННЯ НАДНИРКОВИХ ЗАЛОЗ  
ПІСЛЯ ВПЛИВУ ЕЛЕКТРОМАГНІТНОГО ВИПРОМІНЮВАННЯ ТА ПОЗИТИВНИХ  
НИЗЬКИХ ТЕМПЕРАТУР**

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Being exposed to different temperatures, a man could also be affected by various environmental factors at the same time. Thus there is a great need to study adaptation compensatory mechanisms that appear in the living organism, primarily from the side of the neuroendocrine system.

The purpose of the study was to investigate the changes of adrenal glands of experimental animals during combined effect of electromagnetic radiation (EMR) and positive low temperature (PLT).

The experiment was being conducted for 30 days on mature male rats (6-month-old) under laboratory conditions. The animals were divided into the following groups (n=24): the group exposed to combined effect of EMR (frequency 70 kHz, tension of electrical field 600 V/m) and PLT (from 2°C to 6°C); the group under isolated impact of EMR; the group under isolated impact of PLT; control group. For the identification of changes in adrenal glands, morphology methods as well as morphometric adaptation analysis were used. The study was conducted with the use of microscope Olympus BX-41.

During the morphological study of the suprarenal glands of experimental animals, distinctive changes were noted, particularly, delipidization of cytoplasm at all the layers of cells. Adrenal medulla showed enlargement of cells as well as their nuclei under isolated effect of mentioned factors. On the contrary, under combined effect cells of adrenal medulla turned out to have less intracellular vacuoles and decreased volume of cytoplasm.

Morphoadaptometric analysis showed thickening of all the layers of adrenal glands under isolated impact of both EMR and PLT. However, exposure to combined effect of mentioned factors lead to the opposite result.

The impact of EMR as well as PLT causes an adaptation stress response of the organism, which leads to the change of isolated effects of the factors. The interaction of both factors appears to be synergistic and by all determined indicators.

**Summary:** On the example of a morphological study of the adrenal glands, it was shown that the combined influence of environmental factors has a modified effect compared to the isolated effect of each of the factors.