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FEATURES OF THE IMPACT DIFFERENT PHOTOPERIOD DURATION ON THE HISTOSTRUCTURE OF PINEALOCYTUS OF RATS

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It is proved that the hormone, which takes a significant part in time organization of circadian rhythms, is melatonin. It is synthesized not only in the pineal gland, but its high concentration in plasma depends primarily on the epiphysial activity. Outside lighting has a significant impact on the production of melatonin by the pineal gland. However, the mechanisms of disorders of the pineal gland activity under the conditions of varying duration of light period in the circadian aspect are examined not enough.

The purpose of the study was to clarify the chromorphological changes of pinealocytes with the hypofunction of pineal gland.

Material and methods. Experiments have been conducted on 36 adult albino male outbred rats weighing 0,15-0,18 kg. The animals of the first series stayed during 7 days under the conditions of the standard light regime LD (light from 8.00 a. m. to 20.00 p. m., illumination by fluorescent lamps at the level of cells at 500 lux). The rats of the second series stayed under the conditions of constant light (LL modeling hypofunction of pineal gland) for 7 days. The euthanasia of rats was performed with 12-hours intervals (at 2 a.m. and at 2.00 p.m) by one-stage decapitation on the 8th day under the aethaminalum anesthesia 40.0 mg/kg intraperitoneally). All stages of the experiment were conducted in compliance with the basic requirements of Helsinki Declaration on the humane treatment of animals.

Results. During the study of structure of the pineal gland in mature animals, pinealocytes of various types were found: large light, small dark and transitional forms are detected, but the ratio between them depends on the duration of photoperiod.

In animals under the conditions of the standard photoperiod during the night period of the experiment, the structural organization of pineal gland reflects the extent intracellular "indolaminsynthesizing" processes and the decrease of the pineal peptides synthesis. At 2.00 p.m, morphological structure has the inverse nature.

Conclusions. In conditions of round the clock continuous light, the microscopic organization of pinealocytes shows the expressed violations of reactive nature against a background of the inhibition of intracellular biosynthetic processes.

In the future we are going to do ultramicroscopic morphometric and immunohistochemical studies of the pineal gland structure, under the conditions of changed photoperiod, with the purpose of better understanding the place and role of the neuroendocrine transductor in daily rhythm formation.