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THE SPECIFIC CHARACTERISTICS OF GINGIVAL TISSUES REACTION ON THE HYPOBARIC HYPOXIA ACTION ACCORDING TO ALTERED PHOTOPERIOD DURATION IN IMMATURE FEMALE RATS

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The nature of proteolytic activity in peripheral tissues changes in the process of reaction to a variety of environmental factors, which may be both a manifestation of regenerative processes, and their involvement in the mechanisms of apoptosis. The presence of polyorganic, morpho-functional disturbances, formed at participation of the neuro-endocrine system and the manifestations of which depend on the age and sex is a peculiar feature for systemic adaptation to hypoxia that may create protective effect under various pathologies of the gingiva.

The specific characteristics of proteolysis in the gingival tissues in immature female rats under ordinary conditions of holding and hypoxic conditioning of changes, caused by permanent lighting, by systemic intermittent hypobaric hypoxia, were studied. Peculiarities of the reaction of proteolytic processes indices (intensity of low molecular weight proteins (LMWP), height molecular weight proteins (HMWP) and collagen lysis) on hypobaric hypoxia, influenced by constant light, in the gingival tissues in immature female rats were showed. It has been established that modeling of the hypobaric intermittent hypoxia equal the altitude 4000 meters (2 hours per day for 14 days) decreases proteolysis intensity in the gingival tissues in immature female rats. The pineal gland hypofunction by means of a constant illumination significantly influences upon the character of changes of the proteolytic processes in the gingival tissues, caused by systemic hypobaric hypoxia at a combined use of the indicated influences.

Modeling of chronic hypobaric hypoxia under conditions of natural light in immature female rats resulted in a decreases of intensity of the lysis of LMWP in the gingival tissues by 15,8 %, lysis of HMWP - by 42,8%, and lysis of collagen by 59,2 % in comparison with the control.

Modeling of the decreased melatonin-producing function of the pineal gland by application of constant lighting resulted in significant increase of the activity of proteolytic processes in the gingival tissues in immature female rats that may testify to intensification of elimination of oxidation-modified protein molecules, formed by reducing of tissues antioxidant capacity according to melatonin deficiency.

Simultaneous action of hypobaric hypoxia and constant lighting led to decrease of proteolysis indicators concerning all kinds of protein molecules, comparing to group of animals held in constant lighting and normoxia, and indicators were practically equal to group of animals held in hypoxia only, excluding LMWP lysis, which intensity was higher, than under hypoxic condition only, that probably indicates the hypoxic compensatory effect on the lysis of HMWP and collagen in female rats gingival tissues, increased in melatonin deficiency caused by systemic effect of the constant illumination.