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INFLUENCE OF INTERRUPTIVE COLD EXPOSURE ON THE
CONDITION OF LEPTIN AND ADIPONECTIN IN THE
POLYCHOSIS OVARY SYNDROME

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АДИПОНЕКТИНУ ПРИ СИНДРОМІ ПОЛІКІСТОЗНИХ
ЯЄЧНИКІВ

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Polycystic Ovary Syndrome (PCOS) is accompanied by a combination of hyperandrogenism and insulin resistance and obesity.

Leptin is a peptide hormone that is synthesized by adipocytes and regulates fatty acid homeostasis and reduces the activity of the hypothalamus-pituitary-ovary system. A low level of adiponectin in the blood plasma precedes the occurrence of insulin resistance. Currently, a direct relationship has been established between the level of adiponectin and PCOS, which indicates the important role of processes that occur in adipose tissue and are important in the pathogenesis of this disease.

The aim: To determine the effect of intermittent cold exposure on the state of leptin and adiponectin in polycystic ovary syndrome.

Material and methods: A study was conducted on 24 female Wistar rats. The animals were divided into 3 groups: group 1 — rats that were challenged with experimental PCOS and kept in a vivarium at 23 ° C, (n =8), group 2 — animals that were subjected to intermittent cold exposure (ICE) for 4 -hours in the chamber, with a constant light regime and a temperature of + 4 ° C for 25 days (n = 8), group 3 - control (n = 8) - healthy rats that were not modulated with PCOS and who were in the vivarium at a temperature of 23 ° C.

Polycystic process in the ovaries was modeled by daily (for 25 days) subcutaneous administration to female rats of dihydroepiandrostenediol acetate (DHEA) at a dose of 60 mg / kg of the mass dissolved in 0.2 ml of purified and sterilized olive oil.

On day 26, blood was taken from animals for the study of liptin and adiponectin, after which they were taken out of the CO2 experiment by asphyxiation and the ovaries were taken to confirm the development of PCOS. The organs were weighed, after which they were fixed in a 4% solution of paraformaldehyde (PFD, Sigma) for 4 hours, after which they were placed for 12 hours in a 25% solution of sucrose in phosphate- buffered saline. The organs were frozen in a Tissue-Tek medium (Sakura, Japan). Cryostat sections with a thickness of 5 цш were stained with hematoxylin and eosin and using the AxioVision Rel 4.7 imaging software. performed a morphometric analysis of the ovaries.

Results and its discussion. After administration of DHEA, rats of group 1 showed a significant increase in the number of preantral and antral follicles, confirming the presence of PCOS. The number of corpus lutes in 1 group of rats with the PCOS model was significantly less than in the control. In the ovaries of the 2nd group, the number of preantral and antral follicles also increases, but there are no cysts in the ovaries. This may indicate a protective effect of ICE on the regulation of follicular maturation, which confirms that the administration of androgens leads to PCOS.

ICE normalizes the concentration of adiponectin and liptin in the blood of rats with experimental PCOS to the level of healthy animals.

ICE leads to normalization of adiponectin and leptin levels, which can indirectly affect the secretion of reproductive hormones and inhibit the development of PCOS. In this connection, we can conclude that the stimulation of adaptive physiological reactions against ICE blocks the development of signs of PCOS in rats with the introduction of DHEA. Conclusions. The use of ICE normalizes the state of ovarian tissue, and the concentration of adiponectin and leptin to the level of healthy animals.

*Key words:* polycystic ovary syndrome, adiponectin, leptin, intermittent cold exposure.

*Ключові слова:* синдром полікістозних яєчників, адипонектин, лептин, переривчасті холодові впливи.