EFFECT OF THE AMOUNT OF GINSENOSIDES ON THE MRNA CONTENT OF INNATE IMMUNITY GENES IN THE NUCLEUS ACCUMBENS OF RATS SUBJECTED TO PROLONGED ALCOHOLIZATION

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Introduction. The anti-inflammatory effect of ginsenosides contained in the extract of plants of the genus Ginseng (Panax) has been known for a long time [1], but the mechanisms of action remain unclear. It is known that long-term consumption of ethanol is characterized by the development of neuroinflammation [2], and the amount of ginsenosides reduces its level in various models of pathological conditions of the brain in laboratory animals.

Objectives. To assess the relative content of mRNA of genes involved in the development of the neuroinflammatory process in the NAc of rats subjected to prolonged alcoholization after intraperitoneal injections of the sum of ginsenosides.

Materials and methods. Alcoholization of rats (n = 16) with 20% ethanol solution for 2 months. After discontinuation of ethanol for 7 days, injections of the amount of ginsenosides were performed intraperitoneally (50 mg/kg, n = 8) or physical. solution (n = 8). The amount of ginsenosides was obtained from the Panax Japonicus cell culture (Moscow State University, Department of Plant Physiology). An intact group of rats (n = 10) received water. The rats were decapitated, NAc was removed. RNA was isolated using TRIzol (Evrogen, Russia). RT was performed using M-MuLV reverse transcriptase (Evrogen, Russia). Real-time PCR (Mx3005P, Stratagene, USA) was carried out in a mixture containing SYBR Green Mix (Evrogen, Russia), a mixture of primers (Beagle, Russia). The data obtained are normalized to the mRNA content of the Gapdh gene.

Results. In the group of rats with prolonged alcoholization, the level of Tlr3 and Trif mRNA decreased, but the level of Tlr4, Myd88, Ccl2, Tlr4, Infg mRNA, on the contrary, increased. The mRNA level of Tlr7, NF-κB, Irf3 remained without significant changes throughout the experiment. Injections of the sum of ginsenosides (50 mg/kg) led to a 3-fold increase in the Tlr3 mRNA content and a 1.6-fold decrease in the Myd88 mRNA content as compared to the group of long-term alcoholization of rats, which received injections of saline as a control.

Conclusion. The results obtained indicate the ability of the sum of ginsenosides to exert a corrective effect on the pathophysiological mechanisms observed in the NAc of the brain of rats subjected to prolonged alcoholization.

References

1. Airapetov M.I., Eresko S.O., Lebedev A. A., Bychkov E. R., Shabanov P. D. Involvement of TOLL-like receptors in the neuroimmunology of alcoholism Biomeditsinskaya khimiya 2020; 66(3), 208–215.