

BRAIN-DERIVED OLIGOPEPTIDES SHOW NEUROPROTECTIVE PROPERTIES IN RATS WITH PARKINSON-LIKE SYNDROME

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ABSTRACT

Objective. Our research was designed to study the neuroprotective action of the PC-2 peptide complex in rats with experimental Parkinson's disease.

Methods. To evaluate the efficacy of the PC-2 peptide complex in rats with experimental Parkinson's disease, levels of 8-isoprostane, noradrenaline, dopamine acetylcholine, glutamate, GABA, aspartate, glycine, as well as the activity of isocitrate dehydrogenase and alpha-ketoglutarate dehydrogenase were determined in homogenates of the frontal lobe of the brain.

Results. Treatment with the PC-2 peptide complex normalized concentrations of noradrenaline and acetylcholine, increased concentrations of dopamine (however, they did not reach the level in rats from the control group) on the 20th day from the beginning of treatment. The levels of excitatory amino acids in rats with experimental Parkinson's disease increased, while the concentrations of inhibitory amino acids in homogenates of the frontal lobe decreased. The PC-2 protein complex normalized the content of the studied amino acids on the 20th day of treatment. In addition, the content of oxidative stress markers increased in homogenates of the frontal lobe of the brain in rats with Parkinson's disease, which resulted in a decrease in the activity of mitochondrial enzymes and energy formation against the background of high glutamate levels. The normalization of the parameters of energy metabolism was achieved on the 20th day after the surgery.

Conclusion. The PC-2 peptide complex regulates the level of biogenic amines and neurotransmitter amino acids and, as a result, affects the energy metabolism in experimental Parkinson's disease.

Key words: Parkinson disease; peptides; neurotransmitter agents.