RESEARCH OF THE BEHAVIORAL REACTIONS OF RATS AFTER AN INTRANASAL ADMINISTRATION OF MODIFIED FRAGMENT OF NEUROPEPTIDE Y

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Introduction. Neuropeptide Y (NPY) is a regulatory compound that performs many functions in the body, including the processes of food consumption, reaction to stress, learning, etc. A modified NPY fragment, which is an analogue of the functionally active NPY site, was studied in this work.

Aim. Study of the effect of a low molecular weight fragment of neuropeptide Y on the behavior of rats after intranasal administration.

Materials and methods. The experiment was performed on 30 rats, divided into 5 equal groups. The intact group received water intranasally, the 2nd, 3rd, 4th — a solution of the test compound in a dose of 0.1, 0.15 and 0.2 mg / kg. Comparison drug – Stresam "Bicodex" group 5, was administered per os (22 mg/kg). The following tests were performed: the light/dark test (LDT) and a forced swimming test (FST).

Results and discussion. In the light/dark test for group 2, the time spent in the light chamber increased by 30% compared to the control, but was less than the Stresam group (41%). The time in the light chamber for groups 3 and 4 is not significantly different. Latency for the rate to enter into the dark for groups of 0.1; 0.15 and 0.2 mg/kg was higher, respectively, in 2.4, 5.4 ($p<0.05$) and 1.9 times, compared with control. The latent time of group 2 was relatively equal to group 5. The number of peeps out and transitions between groups did not differ significantly. In FST, the total time of immobilization was dose-dependently reduced compared with control (by 10% – 0.1 mg/kg, 27% – 0.15 mg/kg). The immobilization time of the 4 groups is less than the control by 49% ($p<0.05$) and the Stresam group by 18%. Latent immobilization time increased for groups 2, 4 and 5 in 1.4, 2 ($p<0.05$) and 1.8 times, but for 3 groups it did not change significantly. The number of immobilizations, in comparison with control, for the 4 and 5 groups does not differ, and for the second it increased by 43%, and 32% for the third.

Conclusions. The modified NPY fragment in the light/dark test showed anxiolytic property, less in strength than in Stresam. In a forced swimming test the studied peptide significant showed the ability to delay and reduce the duration of the onset of despair behavior, which may indicate antidepressant-like activity.

STUDY OF THE MODIFIED FRAGMENT OF NEUROPEPTIDE Y INTERACTION WITH COMPOUNDS AFFECTING CENTRAL NERVOUS SYSTEM ACTIVITY

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Introduction. Neuropeptide Y (NPY) is a biologically active peptide involved in the regulation of many processes in the human body. NPY receptors are widespread both in the brain and in peripheral organs. This determines neuropeptide`s ability to affect on various processes such as food consumption, emotional state, vascular tone and so on. The studies were performed with a modified fragment of NPY, which is analogous of C-terminus – that is responsible for receptor binding.

Aim. Investigation of rats` behavioral responses under the conditions of intranasal administration of a modified NPY fragment and compounds that affect central nervous system (CNS) activity.

Materials and methods. The following drugs were used – caffeine-sodium benzoate («Caffeine-sodium benzoate», solution for injection 100 mg/ml, CJSC »Darnitsa Pharmaceutical Company», Ukraine) at a dose of 10 mg/kg, as a compound having psychostimulant and excitatory properties and gidazepam («Gidazepam IC®», tablets 0.05 g. «InterChem» SLC, Ukraine) at a dose of 15 mg/kg, as a compound having anxiolytic and sedative properties at this dose.

The studies were performed on 40 male rats weighing 150-180 g. Animals were divided into 5 equal groups. 1st — control animals that received a solvent (saline) intranasally (i.n.) for 40-45 minutes before the test, and after 20-25 minutes the solvent is intraperitoneal (i.p.). 2nd (caffeine) – animals that received i.n. solvent, and after 20-25 minutes solution of caffeine (10 mg/kg, i.p.). 3rd «caffeine+peptide» – peptide solution (0.1 mg/kg, i.n.) and after 20-25 minutes a solution of caffeine (10 mg/kg, i.p.). 4th (gidazepam) – received a solution of gidazepam 60 minutes before the experiment (15 mg/kg per os), and after 20 minutes the solvent was administrated i.n. 5th – «gidazepam+peptide received» gidazepam (15 mg/kg, per os.), and after 20 minutes peptide solution (0.1 mg/kg, i.n.).