Both the administration of the food additive «SpiruCr1» and of the biopreparation «BioRCr1» have induced an increase of insulin activity by 1.44-1.56 times in comparison with control group (healthy rats). We supposed that this fact is due to chromium involvement in the process of increasing insulin activity. Chromium can be part of some oligopeptides – chromodulins – potentiating the effect of insulin by facilitating insulin binding to the cell surface receptors. Thus, the result of research was demonstrated the ability of the chromium containing preparations - «SpiruCr1» and «BioRCr1» - to stimulate insulin activity.

The prospects for further research. The obtained results demonstrate the positive effect of the chromium-containing bioadditives from spirulina - «SpiruCr1» and «BioRCr1» on insulin activity in rats. Natural chromium containing preparations obtained by biological synthesis can supplement or substitute synthetic chromium containing food additive with similar action. Further clinical and preclinical investigations are required.

References:

Key words: Spirulina platensis, chromium containing preparations, insulin activity, type II diabetes.

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ANHEDONIA AS BEHAVIORAL MARKER OF EXPERIMENTAL NEUROSI S AND ITS CORRECTION

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Anxious and depressive disorders are widespread nowadays. Number of people who suffer from depression and anxiety permanently increases, in particular, in 2017 about 350 million had depressive disorders and about 260 millions – anxious disorders. Anhedonia is the leading symptom of neurosis, depression, schizophrenia, depersonalization, Parkinson’s disease [1]. Inability to feel pleasure during such abnormal conditions has various character, especially at depressive disorders – positive emotions are not long-lasting which do not ease the patient [2]. The decrease of anhedonia symptoms can define the efficacy of the treatment of such ailments. The aim of the investigation is to investigate indices of anhedonia after experimental neurosis in rats based on the derivative of 2-oxoindoline-3-glyoxylic acid (substance 18).

Materials and Methods. Materials and methods of investigation: experiments are done on rats of Wistar line with body weight 180-230 gr. Animals were kept on traditional nutritional, water and 12-hour light regimen. In order to correct neurosis, derivative of 2-oxoindoline was used. The substance, which was investigated, was taken in 12 mg/kg inside per 1 hour before beginning of stressors influence and every 3 hours during the whole period of neurotization. Chronic neurosis was done by «conflict of afferent activators» during 30 days [3]. Diazepam (2 mg/kg) was used by analogical method. Changes of behavior of animals were investigated in the test «sucrose consumption» and in the test sucrose consumption advantage (this test means such action: one bottle of water, one bottle of sugar). The processing of received results was done by Microsoft Statistics 6.0 using criterion t Student.

Results. Based on neurosis, there is decrease of the number of arriving to drinking-bowl in 1,9 times (p<0.001) and decrease of the total number of drunk sucrose in 2,2 times (p<0,001) and decrease of the percentage of drunk water with sugar in the test sucrose consumption advantage in comparison with intact animals. Diazepam after 4
weeks increased the number of arriving to drinking-bowl in 1.4 times (p<0.02), and possibly increased the number of drunk sucrose and percentage of consumed sugar to total number of liquid with experimental pathology. Preventive and therapeutic use of derivative 2-oxoindoline 18 effectively countered anhedonia, and increase of the number of arriving to drinking-bowl with sucrose 1.4 times (p<0.02) and increase of drunk sucrose 1.3 times (p<0.02) in comparison with control pathology without correction. Also, substance 18 assisted in the advantage of sucrose solution.

Also, during experimental neurosis in the test sucrose consumption advantage, the percentage of drunk water with sugar in comparison with control group was decreased. After 4 weeks of neurosis, diazepam intake increased the number of arriving to drinking-bowl in 1.4 times (p<0.02), and possibly increased the number of drunk sucrose and percentage of consumed sugar to total number of liquid in comparison with such during experimental pathology. Preventive and therapeutic use of amide of 2-oxoindoline-3-glyoxylic acid with substance 18 after 4 weeks of neurosis modeling effectively withstood anhedonia. During this period the substance possibly assists in the advantage of sucrose among water.

So, experimental neurosis is accompanied with the development of typical emotional and behavioral disorders (decrease of quantitative and qualitative indices of sucrose consumption). Preventive and therapeutic use of amide of 2-oxoindoline-3-glyoxylic acid effectively corrected the development of taste disorders in sucrose consumption and it didn’t exceed diazepam.

Experimental neurosis caused the development of anhedonia. Therapeutic and preventive use of the substance 18 effectively decreased the manifestations of anhedonia after experimental neurosis in rats. Such results can be essential for further investigation of monoaminergic mechanisms of the derivatives of 2-oxoindoline-3-glyoxylic acid during neurotic pathology in animals.

References:


Key words: derivative of 2-oxoindoline-3-glyoxylic acid, rats, experimental neurosis.