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Impact of fluoxetine on aminergic indexes of anxiety state in rats with different phenotypes of nervous system

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Effects of serotonin selective reuptake inhibitor – fluoxetine – on ethological parameters of anxiety state in lifted cross-like maze in emotionally stable (ES) and emotionally non-stable (ENS) to acoustic stressful stimulus (differed by seizure reaction) male Wistar rats, which are characterized by different levels of biogenic amines in the brain structures, were studied. It was shown that ENS rats are originally differed by upregulation of serotonin (5-HT) and dopamine (DA), whereas ES rats – with upregulation of noradrenaline (NA). The results showed that all animals receiving fluoxetine demonstrated increased anxiety relatively to the controls. Anxiety behavior had different forms of manifestation. It is proposed that different characters of manifestation of anxiety in the rats with different phenotypes of nervous system are related to different character of effect of 5-HT upregulation on serotonergic receptors having different presentation and expression levels in the ES and ENS rats due to original significant differences in 5-HT levels in the nervous system of these animal groups. Biochemical analysis after fluoxetine administration revealed in the ENS animals predominant downregulation of 5-HT accompanied with upregulation of NA in the hypothalamus. In contrast, in the ES rats significant downregulation of 5-HT accompanied with significant upregulation of DA, while in the frontal cortex of these animals significant upregulation of 5-HT with reciprocal downregulation of DA, involved in anxiety state control and being prominent regulator of motor activity, was noticed. So, it is proposed that fluoxetine upregulates neurochemical indexes of anxiety state due to engagement of both systems of 5-HT and catecholamines which in this case act as reciprocal ones.

Biography

Ismailova Khadija defended her Sc.D. thesis at A.I. Garayev Institute of Physiology of Azerbaijan National Academy of Sciences, Baku. At present she is a Head Researcher. She has participated in 3 international scientific projects (Russia, Poland, Turkey) and also in international conferences, congresses, symposiums. She was awarded by International Scientific Fund of SOROS for the scientific achievement. Published more than 120 papers in national and international scientific journals.

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