ROLE OF GLUCOCORTICOIDS IN THE REGULATION OF DOPAMINERGIC NEUROTRANSMISSION

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Several lines of evidence indicate that exposure to various types of stressors, or stress hormones may increase or induce sensitization to psycho-stimulants or enhance susceptibility of experimental animals to the effects of abusing substances. In order to find out what is a biological substrate of the above phenomenon, we investigate the impact of stress hormones on the dopaminergic neurotransmission. It is postulated, first, that corticosterone, an important stress hormone, regulates the dopaminergic neurotransmission at the level of dopamine D-1 receptors. Secondly, corticosterone may enhance the dopaminergic tone by the alterations in the synthesis of tyrosine hydroxylase, however, it is also conceivable that, alternatively, corticosterone may evoke translocation of that enzyme from the cell bodies of dopaminergic neurons to their terminals. Finally, arguments that dopamine D-1 receptors might regulate the release of corticosterone by activation of neurons in the paraventricular nucleus of hypothalamus are discussed.

Key words: dopamine, stress, tyrosine hydroxylase, corticosterone, dopaminergic receptors, addiction