Effect of imipramine on brain D-1 and 5-HT-2A receptors in chronic unpredictable stress model in rats.

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Chronic unpredictable stress (CUS) model of depression is one of the well validated animal models of depression. In this paper, we report the results of investigations into dopaminergic D-1 and serotonergic 5-HT-2A receptors in the brain of rats subjected to CUS procedure and treated chronically with imipramine. We have examined the dopaminergic D-1 ([3H]-SCH 23390) in the limbic area and serotonergic 5-HT-2A ([3H]-ketanserin) receptors in the cerebral cortex by a saturation radioligand binding method in rats subjected to CUS paradigm, imipramine, both CUS and imipramine and control animals. CUS procedure resulted in a significant 36% increase in the D-1 receptor density in the limbic system, which was attenuated by chronic imipramine treatment. Also a 21% increase in the density of 5-HT-2A receptors in the cerebral cortex induced by CUS was reduced by chronic imipramine treatment. The present data indicate that the increases in the density of brain D-1 and 5-HT-2A receptors of rats subjected to CUS, which are “normalized” by imipramine, might be involved in the pathophysiology of “animal depression” (and, thus, in pathophysiology of human depression) and in the mechanism of antidepressant therapy.

Key words: imipramine, chronic stress, brain, D-1, 5-HT-2A receptors, rats

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