

REVERSAL OF STRESS-INDUCED MEMORY CHANGES BY MOCLOBEMIDE: THE ROLE OF NEUROTRANSMITTERS

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Studies on animals have shown that chronic stress is able to evoke behavioral changes such as locomotor activity deficit, decreased sleep, reduced food and water consumption and impaired memory. Chronic stress produces changes in concentrations of neurotransmitters, mainly in the hippocampus. The hippocampus is a vulnerable brain structure that is involved in learning and memory functions.

In this study, we investigated the effects of chronic stress procedure and moclobemide in rats, and the influence of chronic stress on the levels of monoamines: noradrenaline (NE), dopamine (DA) and serotonin (5-HT) in the rat hippocampus [as well as their metabolites: dihydroxyphenylacetic acid (DOPAC) and 5-hydroxyindoleacetic acid (5-HIAA)]. It was found out that chronic 21-day stress caused worsening of memory: the well trained rats after stress procedure lost their ability to find food quickly. Because of many errors in finding the way, the time these animals needed was on average 2.4-times longer than that of the control group. Single, as well as prolonged (21 days) treatment with moclobemide (10 mg/kg/day) counteracted the deficit of memory induced by chronic stress. In stressed animals, we observed an increase in DA, decrease in DOPAC, 5-HT and 5-HIAA and decrease in NE levels. Moclobemide modulated the changes in the levels of neurotransmitters in the hippocampus, decreasing their turnover.

The results demonstrate that moclobemide improves memory impaired by stress. They suggest also that moclobemide has a modulatory effect on stress-induced neurotransmitter changes which may be of importance for the protective effect of the drug with regard to memory impairment.

Key words: *stress, moclobemide, memory, hippocampus, monoamines, corticosterone, rats*

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