A SINGLE ADMINISTRATION OF AGMATINE REVERSES DEPRESSIVE-LIKE BEHAVIOR INDUCED BY CHRONIC UNPREDICTABLE STRESS ADMINISTRATION OF CORTICOSTERONE WITH

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Taking into account that chronic unpredictable stress (CUS) induces depressive-like behavior and that agmatine has antidepressant-like effect in several preclinical studies. The purpose of this study was to investigate the influence of this amine on: a) the depressive-like behavior induced by CUS paradigm, comparing its effects with those presented by fluoxetine and ketamine; b) the immunocontent of the synaptic proteins GluR, synapsin and PSD95 in the prefrontal cortex of mice. The experiments were performed after approval of the protocol by the Ethics Committee of the Institution. Female Swiss mice were submitted to CUS procedure during 14 days. In the 14th day mice received agmatine (0.1 mg/kg, p.o.), fluoxetine (10 mg/kg, p.o.) or ketamine (1 mg/kg, p.o.) and 24 h after the treatment, the animals were subjected to behavioral tests (tail suspension test and open-field test) and western blotting analyses. CUS exposure caused a depressive-like behavior evidenced by the increased immobility time in the tail suspension test. Agmatine and ketamine administrations (p< 0.01, Duncan test) abolished the increase in the immobility time caused by CUS, effect that was not elicited by fluoxetine. However, none of the treatments caused alterations on the locomotor activity in the open-field test. Moreover, the treatments caused no alterations in the immunocontent of GluR1, synapsin and PSD95 in the prefrontal cortex of mice. Altogether the results suggest that agmatine may be a novel therapeutic strategy for the treatment of depression that shares with ketamine the ability to, after a single administration, counteract the depressive-like behavior in an animal model of depression. However, more studies are needed to uncover its mechanisms.

Keywords: agmatine, antidepressant, stress

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