



Short communication

Antidepressant-like effect of chromium chloride in the mouse forced swim test: involvement of glutamatergic and serotonergic receptors

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Abstract:

Chromium (Cr) (III), an essential microelement of living organisms, was reported to exhibit potential antidepressant properties in preclinical and clinical studies. The aim of the present study was to examine the effect of CrCl₃ *ip* administration in the forced swim test (FST) in mice and the involvement of glutamatergic and serotonergic receptors in the antidepressant-like activity of chromium. CrCl₃ in a dose of 12 mg/kg, but not in doses of 6 or 32 mg/kg, reduced the immobility time in the FST. The locomotor activity was reduced by CrCl₃ in a dose of 32 mg/kg. Moreover, the reduction of the immobility time induced by the active dose (12 mg/kg) of CrCl₃ was completely abolished by NBQX (10 mg/kg; an antagonist of the AMPA receptor) pretreatment and partially inhibited by ritanserin (4 mg/kg; an antagonist of 5-HT_{2A/C} receptor), WAY 1006335 (0.1 mg/kg; an antagonist of 5-HT_{1A} receptor) and N-methyl-D-aspartate (75 mg/kg; agonist of NMDA receptor) administration. The present study demonstrates the antidepressant-like activity of chromium in the mouse FST and indicates the major role of the AMPA receptor and participation of NMDA glutamatergic and 5-HT_{1A} and 5-HT_{2A/C} serotonin receptors in this activity.

Key words:

chromium (III) chloride, NMDA, AMPA, 5-HT_{1A}, 5-HT_{2A/C}, receptors, forced swim test, mice
