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AM251, cannabinoids receptors ligand, improves recognition memory in rats

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Abstract:
High density of cannabinoid receptors type 1 (CB1) in the brain suggests that endocannabinoid system plays an important role in the functioning of the central nervous system. Natural and synthetic cannabinoids are known to attenuate learning and memory processes. The adverse effects of cannabinoids are reversed by SR141716A, at first reported to be a selective CB1 receptor antagonist, later shown to possess also inverse agonist properties. The present study was performed in an attempt to determine the influence of different doses of AM251, a member of the same cannabinoid group as SR141716A, on recognition memory evaluated in an object recognition test. Because cannabinoids may alter motor function and affect anxiety, the influence of AM251 on psychomotor activity and anxiety was assessed in an "open-field" test and elevated plus maze, respectively. While the lowest dose of AM251 (1.0 mg/kg) significantly improved recognition memory, higher doses (2.5 mg/kg and 5.0 mg/kg) did not have an influence on it. Moreover, AM251 did not affect anxiety but in the highest dose significantly attenuated psychomotor activity in rats. The main finding of the present study indicates that AM251, at the dose of 1.0 mg/kg, improves recognition memory in rats without alteration of their psychomotor activity and anxiety. The pro-cognitive effect exerted by compounds belonging like AM251 to diarylpyrazole group may be beneficial in therapeutic use of these compounds, especially in patients with cognitive dysfunctions.

Key words:
AM251, cannabinoids, recognition memory, psychomotor activity, anxiety, rat