CANNABINOID ALTER RECOGNITION MEMORY IN RATS

Piotr Kosiorek, Anna Hryniewicz, Izabela Bialuk, Agnieszka Zawadzka, Maria M. Winnicka

Department of General and Experimental Pathology, Medical University of Białystok, Mickiewicza 2c, PL 15-222 Białystok, Poland


Cannabinoids are known to attenuate learning and memory in both humans and animals. In rodents, disruptive effect of cannabinoids on memory, reversed by SR 141716, a specific CB₁ receptor antagonist, was shown in behavioral tests based on conditioning. There are no data concerning the influence of cannabinoids on recognition memory. Recently, the improvement of recognition memory in cannabinoid CB₁ receptor knock-out mice was reported. Therefore, the purpose of the present study was to determine whether a stable analogue of endogenous cannabinoid anandamide, R-(+)-methanandamide (0.25 and 2.5 mg/kg, ip) and a potent CB₁ receptor agonist, CP 55,940 (0.025 and 0.25 mg/kg ip) affect recognition memory in rats evaluated in an object recognition test, based on discrimination between the familiar and a new object presented at 1h interval. Because cannabinoids at the higher doses can produce motor inhibition, the influence of both compounds on psychomotor activity was evaluated in an open field test. CP 55,940 and R-(+)-methanandamide, at both doses given once, 15 min before the learning trial, significantly attenuated recognition memory, measured by the difference in exploration of a new object and a duplicate of the familiar object. Moreover, CP 55,940 at the higher dose significantly attenuated ambulation, and bar approaches, and at both doses also rearings, evaluated in an open field, performed immediately after an object recognition test, while R-(+)-methanandamide at both doses did not alter locomotor and exploratory activity of rats. This is the first evidence that cannabinoids impair recognition memory in rats.

Key words: cannabinoids, recognition memory, locomotor activity, rats

correspondence; e-mail: mmw@umb.edu.pl