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Involvement of CB_1 Cannabinoid Receptors in the Reinforcing Actions of Cocaine

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AIM

The cannabinoids appear to have a different profile compared to other drugs of abuse, since there are controversial data in the literature concerning their ability to reinforce behavioral responses in experimental animals, i.e. to lower self-stimulation thresholds, and to support self-administration or conditioned place preference. The aim of the present study was to examine the effects of WIN 55,212-2, a potent CB_1 receptor agonist (graded doses 0.1, 0.3, 1 mg/kg, ip), on the rewarding efficacy of lateral hypothalamic self-stimulation and on the systemic cocaine-induced potentiation of brain stimulation reward.

RESULTS

WIN 55,212-2 did not affect lateral hypothalamic self-stimulation thresholds, whereas it produced a significant decrease in the maximal rate of responding, i.e. in the performance of the animals. Cocaine produced a significant reduction in self-stimulation threshold, without altering maximal rates of responding, while WIN 55,212-2 attenuated the effect of cocaine at the two higher doses tested. The effects of the CB_1 agonist were reversed by pretreatment with the selective CB_1 receptor antagonist SR 141716A (0.02 mg/kg, ip).

CONCLUSIONS

These results indicate that acute stimulation of CB_1 cannabinoid receptors per se does not affect baseline self-stimulation, but reduces the reinforcing effects induced by cocaine. Taken together these findings suggest that cannabinoids may interfere with brain reward systems responsible for the expression of acute reinforcing properties of drugs of abuse, such as cocaine and provide evidence that CB_1 cannabinoid receptor agonists may be clinically useful in attenuating the rewarding effects of addictive drugs.