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Involvement of cannabinoid CB_1 receptors in drug addiction: effects of rimonabant on behavioral responses induced by cocaine

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Abstract:
A lot of evidence indicate that endocannabinoids and cannabinoid CB_1 receptors are implicated in drug addiction. In the present study, we investigated the effect of the cannabinoid CB_1 receptor antagonist/partial agonist rimonabant on the cocaine-maintained reinforcement and relapse to cocaine seeking as well as on the cocaine challenge-induced hyperactivity in sensitized rats and on discriminative stimulus effects of cocaine in rats. We found that endocannabinoids were not involved in maintenance of cocaine reinforcement and its subjective effects since pharmacological blockade of cannabinoid CB_1 receptors altered neither self-administration nor discriminative stimulus effects of cocaine. On the other hand, withdrawal from repeated access or exposure to cocaine and then a reinstatement of cocaine-seeking behavior or a sensitized locomotor response to a single cocaine challenge, respectively, was potently reduced by pretreatment with rimonabant. The latter observations may show that repeated cocaine treatment and the drug withdrawal produce – apart from behavioral effects – also different neural consequences in the endocannabinoid systems in rats.

Key words:
cannabinoid CB_1 receptors, cocaine, drug addiction, rimonabant