



Role of serotonin (5-HT)₂ receptors in cocaine self-administration and seeking behavior in rats

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Abstract:

Previous studies have indicated a role of serotonin (5-HT)₂ receptors in modulation of the behavioral effects of cocaine. In the present study, the efficacy of SR 46349B (a 5-HT_{2A} receptor antagonist) or SDZ SER-082 (a 5-HT_{2C} receptor antagonist) in altering cocaine seeking behavior was examined in rats. Rats were trained to press a lever for cocaine (0.5 mg/kg/infusion, *iv*) paired with the cue (light + tone). After stabilization of self-administration response, the animals underwent daily extinction sessions during which responding had no consequences. The cocaine seeking behavior was reinstated by cocaine priming (10 mg/kg, *ip*) or by presentation of the cue. Neither SR 46349B (0.25–1 mg/kg) nor SDZ SER-082 (0.25–1 mg/kg) altered the maintenance of cocaine self-administration. SR 46349B (0.5–1 mg/kg) decreased responding to the cocaine priming dose and reduced cue-induced reinstatement, while SDZ SER-082 failed to alter both cue- and cocaine priming-induced reinstatement. These findings indicate that 5-HT_{2A} and 5-HT_{2C} receptors are not significant to cocaine rewarding effects. However, they show the importance of 5-HT_{2A} receptors (but not 5-HT_{2C} receptors) in cocaine-priming- and cue-provoked reinstatement. Since drugs that reduce cocaine seeking also alleviate cocaine craving, 5-HT_{2A} receptor antagonists may be considered to be of possible clinical application for the treatment of cocaine dependence.

Key words:

cocaine, 5-HT₂ receptors, reinstatement, self-administration
