

ROLE OF DOPAMINE D₁ RECEPTOR IN MORPHINE- AND LITHIUM-INDUCED CONDITIONED SACCHARIN AVOIDANCE

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A long-standing issue in the field of drug reinforcement is that of role of Dopamine (DA); its role in the reinforcing properties of psychostimulant is well accepted, while is highly debated in the case of non-psychostimulant drugs. On the basis that drug reinforces, with no exception, induce avoidance of a saccharin solution that has been predictively paired with their systemic administration in a response non-contingent manner (conditioned saccharin avoidance, CSA).

In the present study we have utilized drug-CSA to investigate the role of dopamine (DA) in the motivational properties of morphine. For this purpose we studied the effect of two antagonists of DA receptors, SCH 39166 and raclopride, specific for D₁ and, respectively, D₂ DA receptors, on the acquisition of morphine CSA. For comparative purposes the effect of DA receptors blockade on lithium-CSA was evaluated.

The experiments were performed for 8 days and consisted of three phases: training (5 days) during which all rats were given a daily 20-min free access to water; conditioning (2 days) where all subjects were given access to a novel 0.1 % saccharin solution during 20 min fluid-access period; test (1 day) where CSA was evaluated in a two-bottle choice paradigm in a schedule with two pairings between 0.1% saccharin as CS and morphine or lithium as unconditioned stimulus (US) during 20 min fluid-access period. Morphine hydrochloride (7.5 mg/kg s.c.) and lithium chloride (40 mg/kg i.p.) were administered 45' or 120' after CS-drinking session, respectively.

Morphine and lithium induced strong CSA to saccharin. The DA D₁ receptor antagonist, SCH 39166 (0.1 mg/kg s.c.), administered immediately or 45' after CS presentation prevented lithium-induced-CSA, while failed to affect CSA induced by lithium, when administered 105' after CS. SCH 39166, prevented CSA induced by morphine when administered 30' after saccharin presentation, while do not affect morphine-induced-CSA when administered immediately after CS presentation. Raclopride failed to affect lithium- and morphine-CSA. Conclusions: These results suggest that DA can play a different role in morphine- and in lithium-CSA being consistent with the hypothesis that DA D₁ receptors can affect lithium-CSA by a mechanism involving an impairment of the processing of the short term memory of the taste, while in the morphine-CSA would exert an additional influence on the motivational properties induced by morphine by blunting its appetitive properties.