SEROTONIN1B RECEPTOR LIGANDS IN THE NUCLEUS ACCUMBENS SHELL DO NOT AFFECT THE DISCRIMINATIVE STIMULUS EFFECTS OF AMPHETAMINE IN RATS

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Enhanced dopamine neurotransmission particularly, in the target area of the mesolimbic system, i.e. the nucleus accumbens (NAc), seems to be critical for the behavioral effects of amphetamine in rodents. Nonetheless, recent findings have also demonstrated a modulatory role of 5-hydroxytryptamine (5-HT; serotonin) in these effects. In the present study, we examined whether 5-HT1B receptors in the NAc shell are engaged in the discriminative stimulus of amphetamine. To this end male Wistar rats were trained to discriminate amphetamine (1 mg/kg, ip) from saline (ip) in a two-lever, water reinforced fixed ratio (FR) 20 task. After acquiring the amphetamine-saline discrimination, rats were stereotaxically implanted with bilateral cannulae aimed at the NAc shell and then infused with selective 5-HT1B receptor ligands. The ability of these drugs to substitute for or to alter (enhance or antagonize) the discriminative stimulus effects of amphetamine was examined. When given systemically, amphetamine (0.125–1 mg/kg, ip) produced a dose-dependent increase in drug-lever responding. In substitution studies, microinjection of the 5-HT1B receptor agonist CP 93129 (1–10 µg/side) or the 5-HT1B receptor antagonist GR 55562 (1–10 µg/side) into the NAc shell did not evoke amphetamine-lever responding. Combination tests of 5-HT1B receptor ligands demonstrated that local injection with fixed doses of CP 93129 (1 or 10 µg/side) or GR 55562 (1 or 10 µg/side) with the submaximal doses of amphetamine (0.125–0.5 mg/kg) did not modify dose-response curves of the psychostimulant, nor did it affect its ED50 value.

Our results seem to exclude a role for the NAc shell 5-HT1B receptors in the control of the discriminative stimulus effects of amphetamine. These findings also show that pharmacological stimulation of those receptors does not affect the amphetamine discrimination in rats.

Key words: 5-HT1B receptors, amphetamine, CP 93129, GR 55562, discriminative stimulus effects, rats

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