ROLE OF DOPAMINE D3 RECEPTORS IN CONTROLLING THE EXPRESSION OF COCAINE SENSITIZATION IN RATS

Ma³gorzata Filip#, Iwona Papla, Klaudia Czepiel

Department of Pharmacology, Institute of Pharmacology, Polish Academy of Sciences, Śmętna 12, PL 31-345 Kraków, Poland


It is established that dopamine (DA) is an important brain mediator of the behavioral (i.e. sensitizing) effects of cocaine in rodents. Among DA receptors, recent findings point to engagement of DA D$_3$ receptors in cocaine addictive actions. In the present study, we attempted to determine the role of DA D$_3$ receptors in the expression phase of sensitization to cocaine in rats, using the selective ligands 7-OH-PIPAT (an agonist) and nafadotride (an antagonist) of these receptors. Repeated administration (1–5 days) of cocaine (10 mg/kg, ip) to male Wistar rats significantly enhanced the locomotor activation induced by its challenge dose given after 5-day withdrawal (on day 10). 7-OH-PIPAT (1 mg/kg, but not 0.01–0.1 mg/kg, sc) administered together with a challenge dose of cocaine significantly decreased the response to cocaine in rats treated repeatedly with cocaine. On the other hand, the expression of cocaine sensitization was increased when that drug was combined with nafadotride (0.4 mg/kg, ip) on day 10. The results indicate a role of DA D$_3$ receptors in controlling the expression of cocaine sensitization in rats, and may suggest an importance of DA D$_3$ receptor agonists in the therapy of cocaine abuse.

Key words: 7-OH-PIPAT, cocaine, nafadotride, behavioral sensitization, rats

# correspondence; e-mail: filip@if-pan.krakow.pl