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Research report

Effects of escitalopram and imipramine on cocaine reward and drug-seeking behaviors in a rat model of depression

Joanna Jastrzębska, Małgorzata Frankowska, Agata Suder, Karolina Wydra, Ewa Nowak, Małgorzata Filip, Edmund Przegaliński

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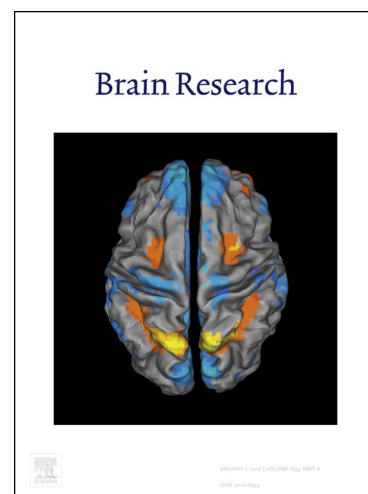
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**Effects of escitalopram and imipramine on cocaine reward and drug-seeking behaviors in a rat model of depression.****Joanna Jastrzębska<sup>a</sup>, Małgorzata Frankowska<sup>\*a</sup>, Agata Suder, Karolina Wydra, Ewa Nowak, Małgorzata Filip, Edmund Przegaliński**

Institute of Pharmacology Polish Academy of Sciences, Laboratory of Drug Addiction Pharmacology, 31-343 Kraków, Smętna 12, Poland.

<sup>a</sup>equal contribution to the study

\*Corresponding author: Małgorzata Frankowska, Ph.D., Institute of Pharmacology Polish Academy of Sciences, Laboratory of Drug Addiction Pharmacology, 31-343 Kraków, Smętna 12, Poland. Voice: (48) 12 6623214; Fax: (48) 12 6374500; e-mail: frankow@if-pan.krakow.pl

**Abstract**

Depression and substance-abuse (e.g., use of cocaine) are disorders with a high frequency of comorbidity. In the present study, we combined bilateral olfactory bulbectomy (OBX), an animal model of depression, with intravenous cocaine self-administration and extinction/reinstatement in rats to investigate the effects of two antidepressant drugs, escitalopram (ESC) and imipramine (IMI), with the goal of determining whether these drugs altered cocaine-induced rewarding and seeking behaviors.

Acutely administered ESC (2.5-20 mg/kg) did not alter the rewarding effects of cocaine in OBX rats or sham-operated controls. The lack of ESC effects was also demonstrated during reinstatement tests to study drug-seeking behavior after its repeated daily treatment during extinction trials. However, acute treatment with ESC dose-dependently decreased the cocaine-seeking behavior and relapse triggered by cocaine priming or drug-associated conditioned cues in both phenotypes. By contrast, acute administration of IMI (2.5-30 mg/kg) reduced the cocaine reward in OBX and SHAM rats. Moreover, IMI effectively reduced the cocaine-seeking behavior after the drug acute pretreatment or repeated administration during extinction training in OBX rats and sham-operated controls.

These results confirm the cocaine anti-reward and anti-seeking efficacy of the two antidepressant drugs studied here. However, the mechanisms for the IMI and ESC activity should be clarified in further studies.

**Keywords:** olfactory bulbectomy, cocaine self-administration, depression, imipramine, escitalopram, rats

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