ADENOSINE RECEPTOR LIGANDS AND COCAINE IN CONDITIONED PLACE PREFERENCE (CPP) TEST IN RATS

Ewa Poleszak*, Danuta Malec

Department of Pharmacodynamics, Medical University School, Saszica 4, PL 20-081 Lublin, Poland


The influence of adenosine receptor agonists and antagonists on cocaine-induced conditioned place preference (CPP) was examined in male Wistar rats. Adenosine receptor agonists, when given alone, induced place preference in some dose ranges, and it seems that adenosine A1 and A2 receptors might be involved in this reaction. All adenosine receptor agonists: 2-p-(2-carboxyethyl)phenethylamino-5'-N-ethylcarboxamidoadenosine (CGS 21680), A2A receptor agonist, N6-cyclopentyladenosine (CPA), A1 receptor agonist, and 5’-N-ethylcarboxamidoadenosine (NECA), A2/A1 receptor agonist did not prevent the acquisition of cocaine-induced CPP but, when administered at the lower doses, they reduced the expression of cocaine action in CPP test. Selective adenosine A1 receptor antagonist, 8-cyclopentyltheophylline (CPT), A2 receptor antagonist, 3,7-dimethyl-1-propargylxanthine, DMPX, and caffeine (non-selective A1/A2 receptor antagonist) markedly and significantly decreased the expression of CPP induced by cocaine, and caffeine (20 mg/kg) decreased also the acquisition of this reaction. Our results suggest the involvement of adenosine A1 and A2 receptors in rewarding properties of cocaine measured in CPP test.

Key words: cocaine, adenosine, CPP test, rats