ROLE OF SEROTONERGIC AND NORADRENERGIC SYSTEMS IN A MODEL OF VISCERAL PAIN

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The effects of selective manipulations of activity of the serotonergic and noradrenergic systems were examined in the rat model of visceral pain. It was found that neither p-chlorophenylalanine(p-CPA)- nor N-chloro-ethyl-2,2'-bromo-benzylamine(DSP-4)-induced strong and selective depletion of the brain and spinal cord serotonin and noradrenaline, respectively, changed in a significant way rat visceral pain perception. On the other hand, 8-OH-DPAT, a full selective 5-HT₁A receptor agonist, prazosin, an α₁-adrenoceptor antagonist, clonidine, an α₂-adrenergic receptor agonist, and two β-adrenoceptor antagonists: propranolol and metoprolol, dose-dependently reduced the number of body writhes induced by intraperitoneally administered 2% solution of acetic acid (the writhing test). The results obtained with selective receptor ligands, DSP-4 and p-CPA, indicate that the noradrenergic and serotonergic innervation of the central nervous system contribute in a complex way to the animal behavior in the writhing test. The 5-HT₁A receptors and α₂-adrenoceptors play an inhibitory role in the expression of rat behavior in this model of visceral pain. On the other hand, adrenergic α₁ and β₁ receptors facilitate the behavioral effects of the irritant agent.

Key words: writhing test, noradrenaline, serotonin, nociception, rats

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