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The effects of histaminergic system in nucleus accumbens of rats in the plus-maze test of anxiety-like behaviours

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Background

There are several studies indicating that histamine may elicit modulatory influence on anxiety-related behaviours both in animals and humans [1-4]. The activity of histaminergic pathways subserving corticolimbic structures is enhanced in response to fear-evoking and other stressful stimuli. The nucleus accumbens (NAc) belongs to the mesolimbic system and is a major component of the ventral striatum of rat. The elevated plus maze (EPM) was used to assess anxiolytic behaviour.

Materials and methods

In the present study, the anxiolytic effect of bilateral injections of the histamine into the NAc was examined in the EPM. histamin (0.01, 0.1, 1 microgram/rat), pyrilamine and ranitidine (0.001, 0.01, 0.1, 1 microgram/rat) were injected i.c.v. at the doses. Animals used in these experiments were male Wistar rats weighing 220-280 g at the time of surgery. Eight animals were used in each experiment. Animals were bilaterally cannulated in the NAc by stereotaxic instrument and were allowed to recover 1-week before behavioral testing.

Results

Bilateral intra-NAc injections of the different doses of histamine, pyrilamine and ranitidine increased the percentage of open arm time (%OAT) and open arm entries (%OAE). The data may indicate that histamine produced a significant anxiolytic effect without the significant changes in the locomotor activity.

Conclusions

In conclusion, the NAc may be involved in histamine, pyrilamine and ranitidine-induced anxiolytic behavior. Generally we can conclude that effects of histaminergic system of NAc anxiolytic is like behavior of neuromedolatory and via the effect on other neurotransmitors releasing.

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