

Poster presentation

The dopaminergic system of ventral hippocampus is involved in the anxiety related behavior

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Background

In the previous studies, it has been shown that dopaminergic mechanisms are related to the production and elaboration of acute and chronic stress. The ventral hippocampus is one of the important brain sites involved in modulation of fear and anxiety.

Materials and methods

To test the effects of dopaminergic system in the ventral hippocampus (VH), we investigated the effect of apomorphine, sulpiride (D2 receptor antagonist) and SCH 23390 (D1 receptor antagonist) microinjections into the VH on the behaviors displayed by male Wistar rats in the elevated plus-maze. In these experiments, animals weighting 220±280 g at the time of surgery were used. Eight animals were used in each group of experiments. After bilaterally cannulating of the animals in the VH by stereotaxic instrument, they were allowed to recover 1-week before behavioral testing. All procedures were carried out in accordance with institutional guidelines for animal care and use. Test videotapes were scored for conventional indices of anxiety (percent open arm entries / time) and locomotor activity (closed arm entries).

Results

Bilateral intra-VH injections of the different doses of apomorphine (0.1, 0.5, 1 microgram per rat) increased the percentage of open arm time (%OAT) and open arm entries (%OAE). The results suggest that apomorphine

produces a significant anxiolytic effect without any changes in the locomotor activity. Similarly, intra-VH microinjections of sulpiride (0.2, 1, 5 micrograms per rat), but not SCH 23390 (0.01, 0.1, 1 microgram per rat), has increased (%OAE) indicating an anxiolytic action. The observed effect of sulpiride may be mediated through dopamine release from the dopaminergic terminals in the VH.

Conclusions

In conclusion, dopaminergic system of the VH can elicit anxiolytic behavior.

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