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Role for monoaminergic systems in the antidepressant and anxiolytic properties of the hydroethanolic leaf extract from Adenia cissampeloides.

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Abstract

BACKGROUND:

Adenia cissampeloides (Planch ex. Hook) Harms (Passifloraceae) leaf infusion is used in traditional African medicine as a stimulant to treat depression and insanity. Thus, this study investigates antidepressant and anxiolytic activities of the hydroethanol leaf extract of Adenia cissampeloides (ACE) in mice.

METHODS:

ACE (50-200 mg/kg, p.o.) was administered to mice 1 h before behavioral studies; the forced swimming test (FST), tail suspension test (TST), elevated-plus maze test (EPM) hole-board test (HBT) and open field test (OFT). In addition, the probable mechanisms of antidepressant- and anxiolytic-like actions of ACE were also investigated.

RESULTS:

ACE (100 and 200 mg/kg) produced significant ($p<0.01$) reduction in immobility, along with a significant increase in swimming activity (75.20%) and climbing (190.00%), respectively, similar to anti-immobility effect of imipramine in the FST. Also, in TST, ACE (100 and 200 mg/kg) treatment significantly ($p<0.01$) reduced the immobility time by 35.60%, and 35.27%, respectively, which was similar to anti-immobility effect of fluoxetine (32.50%). However, the antidepressant-like effect produced by ACE was prevented ($p<0.01$) by yohimbine (α2-adrenoceptor antagonist), or sulpiride (dopamine D2 receptor antagonist) pretreatment. ACE (50 and 100 mg/kg) treatment ($p<0.01$) increased number (41.67%) and duration of head-dips (52.27%) in HBT. Similarly, ACE (50-200 mg/kg) increased duration of open arm entries ($p<0.001$) in EPM. However, this effect was reversed ($p<0.001$) by pretreatment of mice with cyproheptadine (5-HT2 receptor antagonist) (60.87%).

CONCLUSIONS:

Findings from these studies revealed antidepressant-like effect of ACE mediated through interaction with dopamine D2- receptor or α2-adrenoceptor. Also an anxiolytic-like effect through interaction with 5-HT2 receptors.