Evaluation the role of nitric oxide in corticosterone effect's on anxiety behaviors in mice

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Abstract

Background & Objective: Many evidence indicated that action of glucocorticoid receptors can modulate anxiety behaviors and these effects probably mediated by nitric oxide (NO) system. Thus, in this study, we investigated interaction between corticosterone and NO on anxiety behaviors in mice in elevated plus maze (EPM).

Materials & Methods: In this experimental study male albino mice (25-30 g) were used. A standard EPM was used to determine anxiety behaviors. Two behavioral measures were used that include of the percentage of time spent in the open arms and the ratio of open arm entries to total entries during 5 min. Animals received IP injection of L-Name 30 mg/kg as an inhibitor or L-Arginine 50 mg/kg as a synthesis of NO or saline 60 min and corticosterone (1, 2.5, 5 mg/kg) 30 min before of evaluation.

Results: Analysis of data indicated that corticosterone at doses of 1 and 2.5, but not 5 mg/kg significantly reduced anxiety behavior in mice ($P<0.05$). Also pretreatment of L-Name potentiate but injection of L-Arginine had inhibition of corticosterone effects ($P<0.05$).

Conclusion: This study revealed that glucocorticoid induces anxiolytic effects and these effects probably potentiate by NO inhibitor and reduced by NO synthesis. Therefore, it seems that there are interaction between of glucocorticoid and NO system for control of anxiety behaviors.

Key Words: Anxiety, Glucocorticoids, Elevated plus maze, NO, L-Name, L-Arginine, Mice

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