



## Antidepressant-like activity of ellagic acid in unstressed and acute immobilization-induced stressed mice

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### Abstract:

**Background:** The aim of present study was to evaluate antidepressant-like activity of ellagic acid in Swiss young male albino mice; and to explore the possible underlying mechanisms for this activity.

**Methods:** Mice were immobilized for 150 min once only for induction of stress. Ellagic acid (8.75, 17.5, 35 mg/kg, *po*) and fluoxetine (20 mg/kg, *ip*) *per se* were administered to unstressed and stressed mice; and immobility periods were recorded using tail suspension test and forced swim test. The plasma nitrite levels were also estimated in unstressed and stressed mice. Effects of 7-nitroindazole (nNOS inhibitor), aminoguanidine (iNOS inhibitor), prazosin ( $\alpha_1$ -adrenoceptor antagonist), sulpiride (selective D<sub>2</sub>-receptor antagonist), and p-chlorophenylalanine (p-CPA – tryptophan hydroxylase inhibitor) on antidepressant-like activity of ellagic acid were also evaluated.

**Results:** Ellagic acid (17.5 and 35 mg/kg, *po*) and fluoxetine *per se* significantly decreased immobility periods of unstressed and stressed mice, indicating significant antidepressant-like activity. There was no significant effect on locomotor activity of the mice. Ellagic acid significantly decreased the plasma nitrite levels in stressed mice only. Aminoguanidine significantly potentiated antidepressant-like activity and plasma nitrite decreasing effect of ellagic acid (35 mg/kg) in stressed mice. 7-Nitroindazole did not enhance antidepressant-like activity and plasma nitrite decreasing effect of ellagic acid in unstressed mice. Prazosin and p-CPA significantly attenuated antidepressant-like effect of ellagic acid (35 mg/kg) in unstressed mice only.

**Conclusion:** Thus, ellagic acid showed antidepressant-like activity in unstressed mice probably by interaction through adrenergic and serotonergic systems. On the other hand, antidepressant-like activity of ellagic acid in stressed mice might be through inhibition of inducible NOS.

### Key words:

antidepressant, ellagic acid, immobilization stress, inducible NOS, neuronal NOS, monoamines

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