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Protective Effect of Nerolidol Against Pentylenetetrazol-Induced Kindling, Oxidative Stress and Associated Behavioral Comorbidities in Mice

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Abstract

The present study was aimed to investigate the effect of nerolidol on the development of kindling and associate oxidative stress and behavioral comorbidities. Kindling was induced by repeated injections of a sub-convulsive dose of pentylenetetrazol (PTZ-35 mg/kg; i.p.), at an interval of 48 ± 2 h for 43 days (21 injections). Nerolidol was administered daily in three doses (12.5, 25 and 50 mg/kg) along with alternate day PTZ injection. To access behavioral comorbidities, animals were subjected to tail suspension test (TST) and passive shock avoidance (PSA) test to evaluate the associated depression and memory impairment respectively on the last day of PTZ administration. Following behavioral assessment, neurotransmitter level and oxidative stress markers were evaluated in brain. The results showed that nerolidol significantly suppressed the progression of kindling. Also, nerolidol ameliorates the kindling associated depression and memory impairment as indicated by decreased immobility time and increased step down latency, respectively, as compared to vehicle control animals. Further, these behavioral observations were complimented with corresponding neurochemical and oxidative stress markers changes. In conclusion, the results of present study showed that nerolidol treatment has protective effect against PTZ-induced kindling and associated oxidative stress and behavioral comorbidities.

Keywords: Comorbidity; Kindling development; Nerolidol; Oxidative stress; Pentylenetetrazol.

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