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Antioxidant effects of nerolidol in mice hippocampus after open field test

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Abstract

The aim of this study was to evaluate the neuroprotective effects of nerolidol in mice hippocampus against oxidative stress in neuronal cells compared to ascorbic acid (positive control) as well as evaluated the nerolidol sedative effects by open field test compared to diazepam (positive control). Thirty minutes prior to behavioral observation on open field test, mice were intraperitoneally treated with vehicle, nerolidol (25, 50 and 75 mg/kg), diazepam (1 mg/kg) or ascorbic acid (250 mg/kg). To clarify the action mechanism of of nerolidol on oxidative stress in animals subjected to the open field test, Western blot analysis of Mn-superoxide dismutase and catalase in mice hippocampus were performed. In nerolidol group, there was a significant decrease in lipid peroxidation and nitrite levels when compared to negative control (vehicle). However, a significant increase was observed in superoxide dismutase and catalase activities in this group when compared to the other groups. Vehicle, diazepam, ascorbic acid and nerolidol groups did not affected Mn-superoxide dismutase, catalase mRNA or protein levels. Our findings strongly support the hypothesis that oxidative stress occurs in hippocampus. Nerolidol showed sedative effects in animals subjected to the open field test. Oxidative process plays a crucial role on neuronal pathological consequence, and implies that antioxidant effects could be achieved using this sesquiterpene.

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