

# Magnesium treatment palliates noise-induced behavioral deficits by normalizing DAergic and 5-HTergic metabolism in adult male rats

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## Abstract

Magnesium (Mg) is the fourth most abundant biological mineral essential for good health. Neuroprotective, anxiolytic and antidepressant effects of magnesium following stress and brain injuries are well established. In present study, we analyzed the protective effects of magnesium in rats exposed to sub-chronic noise stress.

Magnesium Chloride ( $\text{MgCl}_2$ , 100 mg/kg) was administered intraperitoneally once daily for 15 days prior exposure to noise stress. Rats were exposed to noise stress for 4 h after administration of magnesium for 15 days. At the end of treatment behavioral alterations were assessed.

Animals were decapitated following behavioral testing and the brains were dissected out for neurochemical estimations by HPLC-EC. Improvement in noise-induced memory deficits as assessed by novel object recognition (NOR) test and elevated plus maze (EPM) test was found in magnesium treated rats.

This improvement in noise-induced behavioral deficits following treatment with magnesium may be attributed to a significant decrease ( $p < 0.01$ ) in dopamine (DA) and serotonin (5-hydroxytryptamine; 5-HT) turnover as compared to control rats observed in present work.

These results suggest that treatment with magnesium can attenuate the noise-induced deficits and may be used as a therapy against noise-induced neurodegeneration. Moreover an adequate amount of magnesium in daily diet may help to develop the ability to resist against or cope up with stressful conditions encountered in daily life.

## Keywords

Dopamine Magnesium Memory Noise Serotonin

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