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***In vivo* studies to assess the protective influence of *Lactobacillus plantarum* MTCC1325 on Alzheimer's disease**

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The present investigation was aimed to assess the protective effect of *Lactobacillus plantarum* MTCC1325 against D-Galactose induced Alzheimer's disease (AD) in male albino rats. Recently, we have demonstrated that *L. plantarum* modulates the functions of total ATPases and ameliorates the pathological features of AD. In this study, we have evaluated the potential antioxidant nature of *L. plantarum* through *in vitro* assays (DPPH and H₂O₂), then estimated the antioxidant enzymes (SOD, CAT and GR) and lipid peroxidation levels (MDA) *in vivo* in selected brain regions such as hippocampus and cerebral cortex of male albino rats. Further, the alterations in gene expressions (BDNF and AChE) in the hippocampus of all treated

and untreated rats were assessed by quantitative PCR. From the obtained results it was concluded that chronic injection of D-Galactose caused significant impairment of oxidative stress, lipid peroxidation and nerve degeneration in the brain. But the treatment of AD induced rats with *L. plantarum* for sixty days significantly nullified all above mentioned impairments as compared to AD-Model group. These research findings highlight the protective effects of *L. plantarum* MTCC1325 against D-Galactose induced oxidative stress, nerve degeneration and variations of BDNF and AChE levels in the AD rat brain.

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