Mallikarjuna Nimgampalle et al., J Alzheimers Dis Parkinsonism 2017, 7:6(Suppl)
DOI: 10.4172/2161-0460-C1-034

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, NO and H2O2), and 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 experimental and control group rats were assessed by semi-quantitative PCR. From the obtained results it was evident 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.

Biography

Nimgampalle Mallikarjuna completed M.Sc. (Industrial Microbiology) from Sri Venkateswara University, Tirupati in 2011. Later he worked as Quality Executive Microbiologist in Heritage Foods India Ltd, (Tirupati Branch) during 2012-13. Since 2013 he is pursuing Ph.D. under the guidance of Prof. K. Yellamma, S.V University, India. His areas of research are Functional foods, bioactive compounds from Actinomycetes, Probiotics and their therapeutical applications in neurological disorders.

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