Supplementation of Lactobacillus casei Reduces Beta-amyloid Accumulation in Alzheimer Drosophila melanogaster

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As the lifespan of humans increases, common chronic diseases of older people are becoming more prevalent, predominantly Alzheimer's Disease (AD). AD is a condition where patients experience memory loss, decline in thinking abilities and personality changes. Characterised by the accumulation of beta-amyloid between neurons in the brain, AD detrimentally affects how neurons process and transmit information. Downfalls of current treatments include only mildly relieving symptoms of AD and high cost. As such, new possible treatments, especially the use of probiotics, have been becoming increasingly prominent to curtail AD. In this study, supplementation of dietary Lactobacillus casei (L. casei) was used to investigate its effect on AD in Drosophila melanogaster. Transgenic flies expressing beta-amyloid were fed different dosages of L. casei from eclosion to adulthood. Consequently, geotaxis assay, lifespan assay, rough eye phenotype assessment and brain imaging were performed to assess the effects of L.casei on AD flies. In a nutshell, it was found that supplementation of at least 6 x 104 cfu L.casei was effective in reducing the beta-amyloid accumulation as evidenced by the recovery of locomotion, extended lifespan, reduced eye degeneration and brain imaging. Ultimately, early consumption of L.casei has arisen as a promising treatment for AD due to its cost-effectiveness and easy accessibility, serving to benefit the masses. Current treatments have been limited to alleviating the symptoms of AD instead of addressing the underlying root of AD- the accumulation of beta-amyloid. With L.casei reducing beta-amyloid accumulation, AD patients could potentially make a full recovery.

Awards Won:
Second Award of $2,000