Melatonin’s Effect on Learning and Memory in a Tauopathy Model of Alzheimer’s Disease in D. melanogaster

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Alzheimer’s Disease (AD) is a progressive neurodegenerative disease that causes devastating memory loss and cognitive decline in humans. There is no current cure for AD. Research studies show that oxidative stress is correlated to and possibly a cause of this neurodegeneration. Because antioxidants such as melatonin have been found to reduce oxidative stress, melatonin could alleviate neurodegeneration and serve as an effective dietary supplement for people with with AD. In this experiment, a tauopathy Drosophila melanogaster mutant that expresses human tau (MAPT) under gal4 in neurons was used to model AD in humans. This study measured learning and memory of the Drosophila through an olfactory vortex learning assay in a t-maze. Groups of flies with and without melatonin supplementation were tested in the t-maze. Following experimentation and data collection, preliminary results from this study suggest, but do not confirm, that melatonin reduces memory loss and improves cognitive function in a Drosophila AD model. Further trials are needed to confirm the suggested results.

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