The Effect of Exogenous Melatonin on the Memory Retention of Wingless Drosophila melanogaster

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Melatonin, a hormone endogenously secreted in the pineal gland, is known for its regulation of circadian rhythm and photoperiodism in vertebrates. Since melatonin levels in humans decrease with aging and especially in patients with dementia, this study investigated the effect of exogenous melatonin on memory retention. The biosynthesis of melatonin has been found to occur in Drosophila melanogaster, a small fruit fly with experimental accessibility at the molecular, cellular, and behavioral levels. Therefore, in this study fruit flies were the experimental subjects. Each fruit fly was assigned to a specific dosage of melatonin in their diet and tested for spatial navigation in a T-maze twice. The data collected was used to analyze the difference in the two time trials to draw conclusions regarding the average quality of each group's memory retention. The data show that a 150 ug/ml dosage of exogenous melatonin significantly increases the difference between the first and second trials. These results suggest that exogenous melatonin significantly increases memory retention in Drosophila melanogaster. Keywords: fruit fly, melatonin, memory, T-maze, Drosophila melanogaster

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