A Study of Amyotrophic Lateral Sclerosis: Observations of Drosophila melanogaster Larval and Adult Motor Function After Cycad Exposure

Mallon, Sienna (School: Saint Edward's School)

The purpose of this project is to determine if exposure to cycad plant seeds causes neurological symptoms in larval and adult-stage apterous fruit flies. I hypothesized that if I expose fruit flies to cycad plant seeds, they would exhibit neurological symptoms because fruit flies are good models for disease in humans, and cycad plants have BMAA which has been linked to ALS. I measured the neurological effects of the cycad on the adult fruit flies by exposing 15 flies to the toxin and keeping the other 15 flies unexposed for a week for five trials. Every 24 hours, I put them in a long container with fly lure at one end and timed them for 15 minutes to see what percentage of the flies reached the lure in the control and experimental groups. I also kept track of the number of flies that died each day. I measured the neurological effects on the larvae by exposing 5 larvae to the toxin for 15 minutes while comparing them to 5 larvae not exposed to the toxin for 10 trials by placing them on a petri dish over graph paper and counting how many 1 cm boxes they crossed in 1 minute. For the control adult flies, the average distance traveled per living fly was 18.88 cm, the average percentage of living flies to reach the lure every day was 61.95%, and the average number that died every day was 0.63. For the experimental adult flies, the average distance traveled per living fly was 12.77 cm, the average percentage of living flies to reach the lure every day was 41.91%, and the average number that died every day was 0.8. For the control larvae, the average distance traveled was 5.5 cm, and for the experimental larvae, the average distance traveled was 3.36 cm. Overall, the cycad seeds did have a neurological effect on the fruit flies in their larval and adult stages.

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