CALIFORNIA STATE SCIENCE FAIR
2011 PROJECT SUMMARY

Name(s)
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Project Number
S1719

Project Title
Longevity and Diet: Studying the Relationship between Caloric Intake, Dietary Manipulation, and Life Span in Drosophila

Abstract

Objectives/Goals
The objective of my project was to observe the quantitative effects that caloric restriction, rapamycin and resveratrol supplementation, and intermittent starvation had on lifespan in Drosophila Melanogaster.

Methods/Materials
1 Live Drosophila Melanogaster Culture
18 Drosophila Culture Vials w/foam stoppers for each
18 Plastic Vial Nettings
1 Liter Drosophila Media
1 Liter Distilled Water
100% Purified Trans-Resveratrol
100% Purified Rapamycin
1 Dissection Scope
1 100mL Vial Fly-Nap# Solution
5 Anesthetic Wands

Results
The flies that were given 75% of recommended calories lived approximately 12.5% longer than the flies fed the control diet. The flies supplemented with resveratrol lived approximately 15% longer than flies fed the control diet. Flies that were given 75% of recommended calories AND supplemented with resveratrol live approximately 20% longer than flies fed the control diet. Intermittent starvation was found to have an effect very similar to a 75%-calorie diet. Resveratrol supplementation was also found to have a greater effect in the last 5 days of life rather than the first 5 days. Each of the aforementioned findings were found to be statistically significant using a one-tailed student's t-test.

Conclusions/Discussion
Diets that contain lower amounts of calories may have positive effects on lifespan in organism. Resveratrol, found in the skin of grapes, may also have a significant effect in lengthening the lifespan of organisms. Since these two methods seem to have an additive effect, it seems to suggest that they elongate lifespan through seperate mechanisms. Since the resveratrol supplementation was more effective later in life than earlier, resveratrol seems to prevent natural breakdown of the body rather than provide a strengthening effect.

Summary Statement
Manipulating the diets of flies in order to test the effect each diet has on the fly's lifespan

Help Received
Parents paid for board to be made at Kinko's. Mr. Garabedian (ap bio teacher) allowed me to use back of classroom for lab space.