CALIFORNIA STATE SCIENCE FAIR
2012 PROJECT SUMMARY

Name(s)
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Project Number
J1706

Project Title
Viva La Coffee! The Effects of Various Coffee Bean Roasts on the Longevity of Drosophila melanogaster

Abstract

Objectives/Goals
The objective of my science project was to determine whether the consumption of various types of coffee bean roasts would affect the lifespan of Drosophila melanogaster.

Methods/Materials
I used three types of coffee bean roasts: light, medium, and dark roasted beans. The coffee bean roasts were prepared by roasting the coffee in a hot air popper for specific time increments to achieve the desired roast. The coffee solution was developed by brewing the roasts with distilled water. I combined 10mL of dry fruit fly food with 10mL of brewed coffee solution. My control was brewed distilled water given to the flies in the same manner as the coffee roasts. Each mixture of coffee solution and food was placed in a separate vial. I added 20 granules of yeast into each vial with ten fruit flies. The number of fruit flies remaining alive were recorded daily. Every 10 days the remaining living fruit flies were removed and transferred to a new vial containing fresh food and the coffee solution. I repeated this until there were no living fruit flies from the original ten left. In this manner I compared how long each fruit fly population was sustained on each of the coffee bean roasts.

Results
The results of my investigation indicated that the coffee roast that promoted the longevity of the fruit flies overall was light roasted coffee. When the flies lifespan was counted, I discovered that the flies that consumed the light roasted coffee consistently lived longer than any of the other coffee roasts. After one week, 52% consuming light roast, 37.3% control, 12.7% of the medium roast, and 0% of the fruit flies from the dark roasted coffee were living. After two weeks, only fruit flies from the light roasted coffee and the control were still alive. An unanticipated result that I found was that the medium and dark roasted coffees appeared toxic to the fruit flies and shortened their lifespan.

Conclusions/Discussion
The type of coffee bean roast consumed does have an effect on the longevity of the Drosophila melanogaster. Light roasted coffee lengthened the lifespan; whereas, the medium and dark roasted coffee shortened it.

Summary Statement
I used a variety of coffee bean roasts to show that some roasts can promote a greater lifespan on Drosophila melanogaster.

Help Received
My parents helped in purchasing the fruit flies and supplies.