CALIFORNIA STATE SCIENCE FAIR
2012 PROJECT SUMMARY

Name(s)
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Project Number
J1725

Project Title
The Effects of 1,3,7-Trimethylxanthine on Multiple Generations of Drosophila melanogaster

Abstract

Objectives/Goals
This project aimed to observe how 1,3,7 trimethylxanthine affects the population size of D. Melanogaster. It also aimed to observe what percent of caffeine; five, ten, or forty, if any, would be enough to cause a significant difference in the reproductive success of the flies.

Methods/Materials
Eight vials were created for this experiment, two for each of the four caffeine solutions. Each vial contained an equal amount of media mixed with approximately 15 mL. of caffeine solution. Five male and five female D. Melanogaster of the same age were then placed into each vial. These vials were then exposed to the exact same conditions for about a month. When significant changes in population size were observed, the flies were sedated using Flynap, a sedative known to have no side effects on D. Melanogaster, and then counted. When the media supplies ran low, the populations were transferred into fresh vials containing new media.

Results
It was found that the reproductive success of the flies exposed to caffeine was significantly better than that of the control flies. The five percent solution vials performed the best followed by the ten percent solution vials and then the forty percent solution vials. The control group had the smallest population of all of the vials. At the last observation, the difference between the control group and the caffeine solution groups was quite significant.

Conclusions/Discussion
This experiment was conducted to demonstrate how caffeine affects the reproductive success of D. Melanogaster. Contrary to my hypothesis, it was found that small doses of caffeine are actually beneficial to D. Melanogaster populations. To prove these results, however, I believe that further testing is required in a more controlled environment for longer periods of time. Because this experiment was performed without the aid of a laboratory, it was affected by fluctuations in the environment.

Summary Statement
My project aimed to observe the effects of caffeine on the reproductive success of D. Melanogaster.

Help Received
Chemistry teacher, Mrs. Meyer, helped to obtain Flynap.