CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY

Name(s)
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Project Number
S2401

Project Title
Creepy Crawlies: Exposed

Abstract

Objectives/Goals
The objective of this project was to determine whether different amounts and types of light bulbs can alter the metabolism of an organism. By testing this on ants, crickets, fruit flies, and mealworms, we can apply this information to human beings. We believe that all organisms will respectively have increased metabolisms under the compact fluorescent lighting.

Methods/Materials
Set up the Warburg Apparatus, the instrument which measures the metabolism of small organisms. First measure the metabolism with an ant that is placed in the apparatus. Change the different light bulbs as needed and place the species under the bulb for ten minutes. Do this with all organisms under each bulb and wattage for five times.

Results
The crickets' and mealworms' metabolism increased the most under the halogen lighting. The ants' and fruit flies' metabolism increased the most under the Compact Fluorescent Lighting. For both ants and crickets, their increase under the general purpose was about the same. The increase under these lighting could be due to the exposed coil from the Compact Fluorescent Lighting and the change of color the halogen lighting produces.

Conclusions/Discussion
Possible improvements for future testing of this experiment are testing more organisms' metabolisms. Other possible improvements are testing the different classifications of the ants. Different job classifications do different actions and movements and therefore use up more energy throughout the day; this way one can measure how exercise changes the results. Another change can be adding more types of heat sources and wattages.

Summary Statement
Our project researches the parallel between the effects of different types of lighting on the metabolic rate of small organisms.

Help Received
Friend's mother helped provide lab equipment.