CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY

Name(s)
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Project Number
S1920

Project Title
Comparing the Attraction of Linepithema humile to Various Sweeteners

Abstract

Objectives/Goals
My goal was to determine which common household sweetener (saccharin, sucrose, aspartame, sucralose) the ant species, Linepithema humile, was most attracted to.

Methods/Materials
For the first part of the experiment, which included 7 trials, Argentine ants were caught in groups of 20 specimens each and starved for a period of 24-hours. Then, each group of 20 ants was placed into a paper cup in the center of a dirt-filled circular Tupperware container along with 5 2x2x2 cm cubes saturated with 5 ml of either a 10% saccharin, sucralose, aspartame, sucrose, or 100% water solution placed equidistant from each other along the edge of the container. Every 10 minutes for 1 hour, photographs and records were taken of the number of ants found on each solution-soaked square. For Procedure II, 3 trials were performed where Argentine ants were once again caught in groups of 20 specimens and starved for a 24-hour period. Afterward, they were placed into a paper cup in the center of a dirt filled circular Tupperware container. For a period of 24-hours, they were exposed to 5 dishes of 5 g of a10% saccharin, sucralose, sucrose, and 100% water solution placed equidistant around the edge of the Tupperware. The amount of solution consumed by the ants was calculated using an electric scale.

Results
The results of Procedure I showed a strong attraction of the Argentine ants to the sucrose sample, while they displayed little interest in the aspartame, saccharin, or sucralose samples. Likewise, the specimens in Procedure II showed a strong preference to the sucrose solution, consuming an average of about 0.69 grams of the sucrose solution in contrast to the 0.12 grams of aspartame, 0.04 grams of saccharin, 0.03 grams of sucralose, and 0.00 grams of the water (control) solution.

Conclusions/Discussion
During the overall experiment, the ants showed an extreme attraction to the sucrose samples in Procedure I and consumed the most of the sucrose solution in Procedure II. As a result, the results of the study supported the hypothesis that the Argentine ants would be mostly attracted to the sucrose sample, and over time, consume the most of it.

Summary Statement
My project deals with the ant species Linepithema humile and its attraction to sucrose versus various artificial sweeteners.

Help Received
My mother and brother transported me to various places to obtain my supplies; My sister gave me feedback on my project; Mr. Hunt and Mrs. Cox allowed me use of their equipment