CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY

Name(s)
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Project Number
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Project Title
Aromatic Effects on Calorie-Restricted Gryllus bimaculatus

Abstract

Objectives/Goals
Caloric restriction, limiting an organism#s calorie consumption, can increase certain organisms# lifespan. Many scientists hope that understanding caloric restriction may provide clues to slowing the aging process in humans, but recent studies in fruit flies have shown that olfactory stimulants may diminish caloric restriction#s life-lengthening effect. Some scientists believe that only the odors of rich foods (foods that the particular organism might enjoy) will harm the effect of caloric restriction. The objective of this experiment was to test a set of olfactory stimulants and their effects on caloric restriction in Gryllus bimaculatus (a species of field crickets) and deepen the understanding of when and how caloric restriction might prolong lifespan. The hypothesis was that the odors of foods that crickets are regularly attracted to would diminish caloric restriction#s life-lengthening effect.

Methods/Materials
In this experiment, crickets under various conditions were raised over a period of four to five months in separate habitats. The crickets were raised either on or not on a calorie-restricted diet and were either exposed to or not exposed to an odorant stimulant.

Results
Crickets on a calorie-restricted diet and not exposed to any of the tested olfactory stimulants were found to have a lifespan that was at least over 20 days longer on average when compared to the control group. Most of the olfactory stimulants tested significantly shortened the average lifespan of crickets on calorie-restricted diets.

Conclusions/Discussion
This experiment provides data that odors may have a noteworthy effect on caloric restriction. Further study of the olfactory system could lead to underlying mechanism that causes lifespan extension in calorie-restricted organisms and could answer the question as to how caloric restriction can be used for humans# advantage.

Summary Statement
My project's objective is to test how olfactory stimulants affect the life-lenthening effect of caloric restriction and to determine whether the olfactory system may contain clues as to how to slow down down the aging process in humans.

Help Received