CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY

Name(s)
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Project Number
S1412

Project Title
M.I.R.T-H Multiple Insect Repellent Tomato- Hirsutum

Abstract

Objectives/Goals
We researched and found that there is an Ecuadorian tomato that could repel better than bug repellents. With this information, we plan to test with more locally found tomatoes with common bugs around the house. Hence from this experiment, we hope to find a safer alternative for bug repellent with DEET.

Methods/Materials
aprons, beakers (100, 250, 600), blender, bunsen burner, cages, crickets, German cockroaches, goggles, grape tomatoes, hot plate, hot plate dish, hot plate tongs, Lycropersicon hirsutum f. glabratum seeds, Mill worms, Petri dishes, screen, stirring rods, test tube, thermometer, Walgreens bug repellent
Evaporation-1.Get all the juice out of the tomato, cutting it into small pieces and pushing repeatedly before straining. 2.Put the hot dish full of tomato juice on plate. 3.Use the hot plate to boil the juice to 150°C. 4.record the volume of the distillate. Set to cool.
Testing for results. 5.Put the compound onto a napkin; put it into cages, containers, or jars with the insetc, all in their separated cages. 6.Observe the time that this effect lasts and the insect's reaction to the compound. 7.Repeat trials.8.We will follow the steps 5-7 but this time, DEET will be substituted for the compound. 9.Compare the compound, control, and DEET.
Control-1.Set insects into the cage or jar with just the napkin.
2.Observe how long until the insects touch napkin.
Growing the Lycopersicon hirsutum f. glabratum- 1.Three 500 ml plastic containers are in use. Place three seeds in each one. 2. Water twice daily with 100 ml water in each pot.

Results
The crickets did not seem to be greatly effected by the grape tomato compound. Though it lasted longer than the control, it did not last nearly as long as the DEET . The tomato compound repelled the crickets for at least 10 minutes at every trial. The roaches seemed to not have liked the tomato compound.

Conclusions/Discussion
The HPLC#s results showed the toxicity level was low, and they were organic and safer than DEET. DEET#s graph showed that it was unstable and had a high level of toxicity that was hazardous to us. The oily compound is not absent from the grape tomato, but it seemed that not as much is there as in the Ecuadorian tomato as proven by the elapse time it repelled the insects. Our grape tomato did not even last half as long as the DEET product. Even though the grape tomato had not been a long repellent, it is still far much safer than DEET.

Summary Statement
The purpose of this project is to find a safe bug repellent that can be found locally and in turn will be an alternative to bug repellent with DEET.

Help Received
Mrs. Evans helped by lending us her equipment. Dr. Clyde Sorenson gave us the tomato seeds.