



CALIFORNIA STATE SCIENCE FAIR 2011 PROJECT SUMMARY

Name(s) Justin F. Jorge	Project Number S1711
Project Title Natural Spider Repellents	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The purpose of this experiment is to measure the repellency of two natural substances, wasabi and bitter melon, on cellar spiders (<i>phocus phalangioides</i>), and to run statistical comparisons of these measurements against that of a consumer-ready natural spider repellent, StarBrite Spider Away, whose main ingredient is peppermint. My experiment also tests spiders' reaction to spicy and bitter substances.</p> <p>Methods/Materials Using curling ribbon, I made a 270 by 270 cm test grid with 64 30 by 30 cm and 8 30 by 60 cm tiles. I made the wasabi repellent by dissolving the wasabi powder in water and mixing it with baking soda. The bitter melon repellent was made by blending the bitter melon and mixing the blend with water. I ran one test with 8 different spiders per repellent including the control. For each test, a repellent was painted onto every other tile of the grid. Water was applied to remaining tiles. I let a spider crawl from the center of the grid and, with a chess timer, recorded the time spent in both liquids within 30 seconds.</p> <p>Results For the control, the total seconds spent were 154 in water and 86 in the repellent, with a P-value of 0.0000126. For the bitter melon test, a total of 82 seconds were spent in repellent against 158 in water, with a P-value of 0.0000154. For the wasabi test, the total seconds spent were 135 in water and 105 in the repellent with a P-value of 0.018.</p> <p>Conclusions/Discussion Quinine content in bitter melons is thought to be its main source of bitterness. Also, an experiment suggested that it elicits a response from spiders. Isothiocyanates are used as wasabi plants' defense from animals that want to eat them by irritating their eyes. My data suggests that both the wasabi and bitter melon repellents worked as spider repellents (the spiders spent a significantly more amount of time in water) with the bitter melon's results similar to the control, Starbrite Spider Away. My ANOVA test suggests that my own repellents are not significantly different in repelling properties than the commercial repellent.</p>	
Summary Statement My project tests the spider repellency of bitter melon and wasabi to that of a consumer ready natural spider repellent.	
Help Received Statistics teacher supervised me with the statistical analysis of data.	