



CALIFORNIA STATE SCIENCE FAIR
2014 PROJECT SUMMARY

Name(s) Matthew S. Moser	Project Number 34547
Project Title The Effects of Auranofin on Adult and Larval Mosquitoes	
Abstract Objectives/Goals The purpose of my experiment was to test the effects of auranofin on the survival rate of adult and larval mosquitoes. Methods/Materials To determine the effects of auranofin on the adult stages of mosquitoes, I set up 12 containers into four groups of three. In each of the containers I put 14 mosquito pupae, three small cups filled with water (one for the pupae and two for females to lay eggs), and a cotton ball containing a mixture of auranofin and sugar water (for food). The concentrations of the auranofin-sugar water mixture varied depending on the group. The groups were: Control, Low, Medium, and High concentrations. Results To determine the survival rate of larval mosquitoes, I put four different instar stages into a 24-well plate that were exposed to varying concentrations of auranofin and a control. Each treatment group had four replicates. The adult mosquitoes given the medium dose had the highest mortality. Female mosquitoes had a higher percent mortality compared to the male mosquitoes. The highest concentration of auranofin caused the highest mortality only in the first instar stage after 2 days. Conclusions/Discussion I found that the medium dose of auranofin had the highest mortality rate on the adult mosquitoes, especially the female mosquitoes. I believe this is the result of a #Goldilocks# effect. The high dose may have been too strong and was distasteful for the mosquitoes, while the low dose was too weak and wasn't strong enough to kill all the mosquitoes. I also found that the auranofin at the highest dose killed the first instars and not the second, third or fourth instars within 24 hours. The reason why might be because the first instars are much smaller than the older instars and are more sensitive to the drug.	
Summary Statement My experiment was designed to see whether auranofin had an effect on both the adult and larval mosquitoes.	
Help Received Mother provided the drug; UCSF supplied lab equipment; Marin Sonoma Mosquito & Vector Control District supplied the mosquitoes/mosquito larvae	