



**CALIFORNIA STATE SCIENCE FAIR  
2003 PROJECT SUMMARY**

<b>Name(s)</b> Vanessa E. Cox	<b>Project Number</b> <b>S1306</b>
<b>Project Title</b> <b>A Two Year Study: Isolation of the Antibiotic Fraction of Arctostaphylus Using the Extraction of Eugenol as a Model</b>	
<b>Objectives/Goals</b> The objective of the experiment was to isolate the chemical fraction in which the bioactive ingredient of Arctostaphylus was located.	
<b>Abstract</b>	
<b>Methods/Materials</b> In the preliminary tests, eight different species of plants were tested for antibiotic activity. An extract of each sample was obtained by grinding the plant with distilled water using a mortar and pestle. A concentration disk was then soaked in the extract and placed on an agar plate inoculated with E. coli. Duplicate tests were run for each plate. Fresh garlic was used as a positive inhibitory control, while distilled water was used as a negative control. These plates were incubated at 84 degrees F. After establishing Arctostaphylus as the best inhibitor of E. coli, the fractions were separated using the method for extracting eugenol. I crushed 32.13 grams of Arctostaphylus, added 200 mL of water and steam distilled it according to the procedure for extracting eugenol.	
<b>Results</b> In the preliminary experiment, Arctostaphylus had the largest rings off inhibition surrounding the concentration disks, 3mm and 5mm. After distillation, the boiled Arctostaphylus fraction showed inhibition as did the raw fraction, my control for this second part of the experiment. The clear, colorless distillate did not show any inhibition.	
<b>Conclusions/Discussion</b> My results show that the bioactive agent in Arctostaphylus is water-soluble as it remained in the boiled fraction and was not carried over into the distillate fraction as it would have had it been water-insoluble. My results also show that the bioactive agent was not destroyed by the boiling involved in the steam distillation process.	
<b>Summary Statement</b> The purpose of my project was to isolate the fraction through steam distillation of Arctostaphylus that contained the bioactive ingredient, which inhibited the growth of E. coli.	
<b>Help Received</b> Used lab equipment at CSU, Chico under Dr. Don Alger, Chem. Dept. Dr. Patricia Parker, Microbiology Dept., CSU, Chico, for initial plant extraction procedure. Ms. Barbara Mudrinich, Science Dept., PV High, provided lab equipment and E. coli. My mother corrected my write up. My father edited my write	