



**CALIFORNIA STATE SCIENCE FAIR
2009 PROJECT SUMMARY**

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Project Title
Chumash Medicine: Antibacterial Properties of Native California Plants

Abstract

Objectives/Goals
 My objective was to test if native California plants that the Chumash used (native American tribe) for antibiotic purposes actually worked and if they worked better than some of the antibiotics today like Neosporin.

Methods/Materials
 Materials: California Poppy, California Fuchsia, White Sage, Rosemary, Methanol, Water, Blade, Filter Paper, Petri Plate, ropper, Agar, Glucose, Albumin Powder, Cotton balls, Test tubes, bottles/caps, Goggles, Gloves, Bacteria, Neosporin, stirrer, Beaker, Graduating cylinder, tubing, Dichloromethanol, Steam
 Procedures: Making Extracts- (1.) Cut plants a sterilized plate into fine pieces (2.) Measures the weight in grams, try to get the same test soluble in the same range when weighing. (3.) Add an alcohol or liquids, to plants that are in test tubes. Crush cut plants with a stirring rod until a shade of dark or light green appears depending on which liquid used.
 (4.) Separate the plant material from the extract, the plant material by filtering it with a glass pipette with some cotton in the bottom to catch the plant material leaving only the extract.

Results
 Averages: (1.) Poppy water Soluble Average-0mm. (2.) Poppy methanol soluble Average-1mm. (1.) Fuchsia water soluble Average-0mm. (2.) Fuchsia methanol soluble Average-1.5mm. (3.) Fuchsia eight times plant mass methanol soluble Average-2.5mm. (1.) Rosemary water soluble Average-.3mm. (2.) Rosemary methanol soluble Average- 2.8mm. (3.) Rosemary eight times plant mass methanol soluble Average-3.8mm. (4.) Rosemary Dichloromethanol soluble Average-2mm. (5.) Rosemary Steam soluble Average-2mm. (1.) White Sage water soluble Average-0mm. (2.) White Sage methanol soluble Average-.5mm. (3.) White Sage eight times plant mass methanol soluble Average-3.5mm. (4.) White Sage Dichloromethanol soluble Average-2.3mm. (5.) White Sage Steam soluble Average-2.3mm. (1.) Methanol Control Average-0mm. (1.) Neosporin Control Average-1.6mm.

Conclusions/Discussion
 My hypothesis was correct, some of my plant extracts did show medicinal purposes. Although using water as a solvent did not work out very well, it wasn't able to get very much extract from the plants therefore showing little or no results. The overall average of water soluble extracts when combining all the plant observations of bacterial resistance. Overall, the plants that I used, California Poppy, California Fuchsia, Rosemary, and White Sage acted successful and in the end my data turned out exceptionally well to help support my hypothesis.

Summary Statement
 I used native California plants used by the Chumash, a Native American tribe, for antibiotic purposes and made extracts of the plants to see if they truly did work.

Help Received
 o Mr. Callaway: For letting me work in his class room and taking me to the University of Channel Island to meet with Dr. Hampton. o Dr. Hampton: For letting me make the extracts and use the equipment at the University of Channel Island. o Susan Sharpe (Mom): For proof reading all my work.