CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY

Name(s)
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Project Number
J1311

Project Title
Karuk Antibiotics

Abstract

Objectives/Goals
I wanted to test plants used by the Karuk Tribe in Humboldt County to see if they had antibacterial affects on bacteria that cause skin infections.

Methods/Materials
I tested nuts from the Pepperwood tree (Umbellularia Californica) and a salve made from Western Coltsfoot (Petastites Frigidus). I compared how well they prevented growth of two pure strains of bacteria (Staphylococcus Epidermis and Pseudomonas Fluorescens) and four wild strains of bacteria I collected from my skin. I tested them using agar plates and measured the no-growth zone around the antibiotics.

Results
Both the Pepperwood and the Coltsfoot had antibacterial affects on the skin bacteria. The no-growth zone for the control Neosporin sample averaged 0.5 cm radius over 12 different test sites. The no-growth zone for Pepperwood nuts tested with Staphylococcus Epidermis had an average radius of 0.7 cm. The average no-growth radius for the Coltsfoot salve was 0.5 cm against Bacillis Subtilis. Neosporin had a radius of 0.4 cm against Bacillis Subtilis. Against the Streptobacillis bacteria, the Coltsfoot salve had a radius of 0.6 cm.

Conclusions/Discussion
I was able to demonstrate that Pepperwood Nuts and Coltsfoot have significant antibacterial affects on common skin bacteria. Pepperwood nuts in the form of a poultice of ground Pepperwood nutmeat and olive oil showed a larger no-growth zone than Neosporin against Staphylococcus Epidermis bacteria. Coltsfoot was effective against Bacillis Subtilis and Streptobacillis bacteria. Many bacteria that cause infections are showing more and more resistance to our modern antibiotics. My results show that these traditional Native American medicines may be a source of new antibacterial medicine.

Summary Statement
I tested plants used by the Karuk Native American tribe to treat infections to see how well they stopped the growth of skin bacteria.

Help Received
Josephine Peters taught me about her herbal remedies and gave me the plants for my experiment. Dr.Terry Jones at Humboldt State University taught me how to do the agar testing. My parents watched me handle the bacteria. My brother helped me classify the wild bacteria at his school's biology lab.