CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY

Name(s)
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Project Number
22150

Project Title
A Search for Natural Antibiotics using E. coli

Abstract

Objectives/Goals
The objective of my experiment was to determine if plants and fungi growing in the Chico area possessed possible antibiotic properties.

Methods/Materials
Forty-nine samples of plants and fungi were collected. Each sample was ground with distilled water using a mortar and pestle forming an extract. One drop of each extract was placed on agar plates cultured with E. coli. Fresh garlic extract was used as a positive inhibitory control and distilled water was used as a negative control. Duplicate samples were run simultaneously. The plates were incubated at 84 degrex Fahrenheit, observed daily with results recorded. The pH of samples was also taken to determine if it was a variable.

Results
Possible antibiotic activity was noted as a clear space surrounding the sample extract spot, separating it from the E. coli lawn. Five samples exhibited what appeared to be possible antibiotic activity early on, only to be overgrown by the E. coli later. Five other samples showed more definitive results with sustained inhibition. Those that were overgrown from the outset were determined to have no antibiotx potential against E. coli.

Conclusions/Discussion
My results suggest that the five samples which showed possible antibiotic potential early on , only to be overgrown later, may have had a possible inhibitory effect on the growth of E. coli, but not the ability to kill it. The five samples, Manzanita, True Myrtle, India Hawthorne, Madrone, and Coastal Redwood, x seemingly possess antibiotic properties caused by factors other than pH because they had sustaint inhibition. At the time of this application, I am running more tests on the ten positive samples in an effort to confirm the data from my original experiment.

Summary Statement
The purpose of my project was to test, using plants and fungi, for naturally occurring antibiotics in vitro.

Help Received
Used lab equipment at CSU, Chico under Dr. Patricia Parker, Microbiology Department. Dr. Kingsley Stern identified the plants/fungi. Ms. Barbara Mudrinich, PV High, provided lab equipment and E. coli. My father helped me collect and attach backboards.