CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY

Name(s)
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Project Number
S0801

Project Title
The Chemical Adaptations of Marine Algae in Stressed Environments

Abstract

Objectives/Goals
The objective of my experiment is to identify and contras adapted chemical components of the same species of algae in environmentally different areas. The algae samples were taken from areas that were of stressed/polluted surroundings and areas that were clean and uninhabited.

Methods/Materials
In order to find the chemical components of the algae a method called Thin Layer Chromatography(TLC) was used. The seven algae samples were massed out equally and chemically extracted with ethyl acetate. After 48 hours the extracted liquid was then transferred into epitubes and spun in a micro-centrifuge. A depth of less than 0.5 Ethyl acetate was poured into a chromatography tank. On a TLC plate a line was carefully drawn 0.5 cm above the bottom. The TLC plate was then spotted 7 times by each individual algae and was then placed in the chromatography tank. Using a program called NIH image processing the TLC plate was analyzed

Results
Taken from the bay area, 7 algae samples were found in 5 different locations, 3 of which were polluted and 2 were clean. When analyzed the 7 samples contained 19 chemical compounds. Within these 19 chemical compounds 6 compounds were found to be unrelated to any other components. The different components were usually found in areas that were stressed. This signifies that chemical adaptations must have been made by the algae in order to survive in a polluted environment

Conclusions/Discussion
Thin layer chromatography is just the first step of an expanded experiment. If chemical adaptations were to occur between one species of algae in two environmentally different locations, the change may be substantial enough for the plant to possess medicinal benefits.

Summary Statement
In order to identify the chemical adaptations of algae in stressed environments a method called Thin Layer Chromatography is used to analyze each separate components in a sample.

Help Received
Mr. Okuda applied destructive spray; Grandfather aided in finding algae