CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY

Name(s)
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Project Number
S1323

Project Title
Bioactive Compounds in Marine Bacteria

Abstract

Objectives/Goals
Marine bacteria sustain life in conditions that may be detrimental to humans. This project was designed to find marine bacteria with bioactive compounds that could be beneficial for human health. It was hypothesized that at least one set of marine bacteria taken from various seemingly extreme conditions at the Golden Gate Ocean Beach would exhibit signs of beneficial bioactive compounds.

Methods/Materials
Marine samples were collected, cultured, isolated with gram-staining, and cultured again. The samples were pelleted and then sonicated/frozen to burst the cells, releasing bioactive compounds. Microbial assays were run against yeast/Ecoli bacteria to test for zones of inhibition.

Results
The first trial displayed zones of inhibition for all marine bacterial samples, but it would be disproved by further experimentation. Additional testing led to the conclusion that the collected samples (Cliff Mussels, Water Mussels, Ocean Water, Green Algae, and Brown Algae) did not exhibit any signs of beneficial bioactive compounds that would inhibit the growth of yeast/Ecoli bacteria.

Conclusions/Discussion
The marine bacteria samples collected from the Golden Gate Ocean Beach are not bioactive against yeast and Ecoli bacteria. Since the bacterial samples were grown in a 3.3% Instant Ocean marine broth and the pelleting process was skipped, high concentrations of salt remained in the supernatant after sonicating/freezing the tube. Thus, when each disc was dipped and tested against Ecoli/yeast, kill zones resulted due to the salt. Further experimentation showed no kill zones, indicating that the samples do not possess the desired bioactive compounds that may inhibit growth of yeast and Ecoli.
If this project were to be extended, more marine samples would be collected and tested. Samples would be taken at more extreme environments.

Summary Statement
This project was designed to find marine bacteria with bioactive compounds that could be beneficial for human health.

Help Received
Mark Okuda helped supervise project at Silver Creek high school.