CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY

Name(s)
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Project Number
S1401

Project Title
Beach Closings: Is It the Kelp?

Abstract

Objectives/Goals
My purpose is to test a new theory that decaying kelp could be one of the sources of elevated fecal indicator bacteria that has caused Cowell Beach to be posted with swimming advisories. My goal is to determine if decayying seaweeds are indeed the cause of increased coliform levels measured at Cowell Beach and which species may be the culprit.

Methods/Materials
I collect samples of seaweed in sterile Whirl-Pac bags from Cowell Beach. Next i crush the seaweed in the bag, shortly thereafter I add 100ml of sterile water to each bag and incubate at room temperature for 24 hours. After 24 hours, I emply the Membrane Filtration Process filtering the samples through a filter, plating on media and incubating for 24 hours at 44.5 degrees C. I count and record number of fecal coliform colonies per 100ml of water.

Results
Coliform counts revieved from the kelp samples were sporadic and did not fallow any trend. They did not strongly correlate with the coliform counts from the ocean.

Conclusions/Discussion
Overall my results were not what I expected. Although I did find positive Fecal Coliform growth in kelp samples from Cowell beach, it did not highly correlate with the coliform levels in the water. I concluded that a factor determining coliform levels in the kelp is the amount of decay that has occurred, which is what catalyzes the bacteria growth. Spikes in bacteria growth can be attributed to external factors, such as increased storm run off from the storm drains. Although, my second experiment did provide a valid conclusion. From my tests I can conclude that the bacteria E.coli can successfully grow off of nutrients made up of only kelp and artificial sea water. This proves that kelp is a possible host for fecal coliform bacteria living in the ocean and on the shores.

Summary Statement
To examine kelp as a source for fecal coliform levels of my local beaches.

Help Received
Used lab equpment at University of Santa Cruz under the supervision of Dave Bernick