CALIFORNIA STATE SCIENCE FAIR
2016 PROJECT SUMMARY

Name(s)
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Project Number
36786

Project Title
The Effects of Pollution on Pyrocystis fusiformis

Abstract

Objectives/Goals
Millions of gallons of pollutants end up in the oceans each year, affecting millions of marine organisms. This experiment aims to understand how Pyrocystis Fusiformis (a marine dinoflagellate) is affected by pollution. Vials of Pyrocystis Fusiformis were polluted by Shell gasoline, a fungicide, and distilled white vinegar. The vinegar decreased the pH, simulating one of the effects of global warming: ocean acidification.

Methods/Materials
20 10ml vials of Pyrocystis fusiformis (dinoflagellates; bought from Sunnyside Sea Farms), 1 lamp (7W LED) with an incorporated timer, 1 bowl to ensure complete darkness, fungicide, shell gasoline, distilled white vinegar (Heinz), pH strips, a stopwatch, a darkened room, Omax microscope (10-100 magnification).
Measure the glow length of the dinoflagellates (seconds) once a day for about a week.

Results
The dinoflagellates died the first day tested after being polluted with the fungicide. When Shell gasoline was added to the vials, a steady decrease of glow length was observed and, on average, it was 73% shorter than before the pollutant was added. Finally, when the pH levels were dropped to 6.0-6.5, a steady decrease of glow time was recorded and, on average, it was 82% shorter than when the vials were unaffected. A time spike on the second day of testing was also observed in the pH trial. The 3 vials kept as controls maintained a steady glow time throughout the experiment.

Conclusions/Discussion
This experiment demonstrated that the tested pollutants negatively affect Pyrocystis Fusiformis. Dinoflagellates have an important niche in the marine ecosystem and many consequences would arise if their mortality rates increased. More importantly, this research can be used to predict the rate of mortality that will occur as the ocean pH levels continue to drop as a result of global warming.

Summary Statement
I tested three differnt pollutants on Pyrocystis Fusiformis, and proved that they all effect this marine algae negatively.

Help Received
I designed my experiment and interpeted the concluding data myself, but my parents helped me in the collection of data.