CALIFORNIA STATE SCIENCE FAIR
2011 PROJECT SUMMARY

Name(s)

Jordan Hamwey; Kevin Zavala-Zimmerer

Project Number

S1507

Project Title

A Salty Snack for E. coli: The Efficacy of the 72-hour Rule

Abstract

Objectives/Goals

The objective of our project was to try and test the efficiency and credibility of the 72-hour rule by growing E.coli in different concentrations of seawater and measuring there growth over time. For those unfamiliar with what the 72-hour rule is, it is a merely a suggestion for how long someone should stay out of the ocean after a rainstorm.

Methods/Materials

To conduct our experiment, an LB Broth solution was made with de-ionized water and sea water to provide nutrients to the bacteria. Two colonies were then added to the 5mL of broth and incubated for 3hrs. The five different concentrations were made using the LB Broth; the broth was split into culture tubes with 5mL each. These tubes were autoclaved. 100 micro-liters of the incubated E. coli was added to each of the culture tubes. The leftover broth was used to make blanks that would be used in the spectrophotometer. After 24hrs the solutions were tested for growth in a spectrophotometer. This process was repeated every 24hrs for 72hrs and again at 120hrs.

Results

Our results show that E.coli was still growing steadily in all concentrations of seawater.

Conclusions/Discussion

Due to the fact that there was still E.coli growth in the seawater, this proves that there is a potential that the 72-hour rule may need to be extended. However, in a real life situation, the E.coli in storm water runoff would be competing with other bacteria and pollutants which may inhibit its growth.

Summary Statement

To test the effectiveness of the 72-hour rule by growing E.coli in different concentrations of seawater and measuring their growth.

Help Received

Dr. Vavra provided guidance as well as lab materials.