CALIFORNIA STATE SCIENCE FAIR
2017 PROJECT SUMMARY

Name(s)

Phoenix T. Rumbaugh

Project Number

S0627

Project Title

Finding Material to Coat Clam Shells to Stop and/or Prevent Them from Dissolving in Acidic Liquids

Abstract

Objectives/Goals

The objective of the project is to find a material to coat short necked clam shells, so that the shells can last for short periods of time in acidic lliquid.

Methods/Materials

42 short necked clam shells about the same weight, 42 Ball jars.Scale,
3 acidic liquids: Seltzer Water, Coca Cola, Vinegar.
6 Coating materials:Bees wax, fluoride varnish, knox gelatin, kelp slime, casein, Agar agar mixed with glycerin. no coating
3 tests, 1st test of 12 coated clam shells placed in 14 jars filled with Seltzer Water at 4ph for 3 day
2nd test 12 coated clams shells placed in 14 jars filled with Coca Cola at 2.25 ph for 3 days
3rd test 12 coated clam shells placed in 14 jars filled with vinegar for 3 days

Results

The most effective clam shell coating with all three acidic liquids was Agar Agar mixed with glycerin. Agar Agar mixed with vegtable glycerin was 100 percent effective sitting in Seltzer water at 4 ph for 3 days. It was 100 percent effective in Coca Cola at 2.25 ph for 3 days. but it was 83-94 percent effect when placed in vinegar for 3 days.

Conclusions/Discussion

Repeated testing of the 6 clam shell coatings found the Agar Agar glycerin mix the most effect at protecting the short necked clam shells. Being a seaweed, the Agar agar and vegatable glycerin are nontoxic, biodegradable, durable, and flexible, which may make it a good candidate for use in the short term for protecting short necked clam shells. And it may possibly be used in the future on clam farms/

Summary Statement

I created an Agar Agar/glycerin mix that may be used to coat short necked clams to protect them from ocean acidification.

Help Received

Information and help from Emily Green Chemistry teacher who taught me about fluorine and fluoride, Clifton Herrmann M. Sc candidate, applied marine and watershed CSU monterey bay, NOAA for their information about acidification, Bodega Bay Sea Lab, Bodega Bay Oyster Farm, Monterey Bay