



**CALIFORNIA SCIENCE & ENGINEERING FAIR
2019 PROJECT SUMMARY**

Name(s) Phoenix Rumbaugh	Project Number S1524
Project Title Mitigating Effect of Yucca Root Powder on Microcystis aeruginosa	
<p style="text-align: center;">Abstract</p> <p>Objectives Objective: To determine if Yucca Root powder can mitigate the growth of Microcystis Aeruginosa..</p> <p>Methods Five tubes of non-toxic Strain of Microcystis Aeruginosa, one bag of Yucca root powder, 35 test tubes, test tube stand, four boxes of microscope slides, three boxes of microscope slide covers, digital microscope with camera built in, Apron, protective glasses, Nitrile gloves, Mask, Antibacterial wipes, plastic sheets for Small pieces of glass slide covers bacterial soap bucket bottle of bleach heater for test tubes, digital thermometer, digital metric scale, small funnel, small glass metric graduated cylinder, printer. I filled 25 5ml bottles with 3ml of non-toxic Microcystis Aeruginosa, I made 5 groups of 5 test tubes. In each group, there were 2 control test tubes, 1 test tube with 0.06 mg Yucca root powder added, 1 test tube of 0.12 mg of Yucca root powder added, and one test tube of 0.24 mg of Yucca root powder added. Over the next 5 days, I would make a slide of each test tube once a day and take a photo of the slide. The test tubes were exposed to light and kept at a constant 20 -22 degrees Celsius. Then I would count the Microcystis. On the fifth day, I wrote my data and results.</p> <p>Results The Microcystins diminished about 30% in the solutions with 0.06 mg of Yucca root powder, about 40% in the solution of 0.12 mg of yucca root powder and about 65% in the solution of 0.24 yucca root powder.</p> <p>Conclusions Based on the quantitative analysis of this project, the Yucca root successfully diminished the amount of Microcystis Aeruginosa. This could mean that the Yucca root may be a viable deterrent for Microcystis Aeruginosa. I do believe that this project should be tested further with more testing. Before the Science and Engineering Fair, I would like to test further, including using meters for ammonia and possibly dissolved oxygen and temperature.</p>	
Summary Statement This project is about using Yucca root powder to stop or slow down a toxic Microcystis Aeruginosa, one of the most common cyanobacterias.	
Help Received I received help from my Chemistry teacher at Santa Cruz Learning Center, AFE counselor Joanne Brown, Anne Rumbaugh	