CALIFORNIA STATE SCIENCE FAIR
2015 PROJECT SUMMARY

Name(s)

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Project Number

S1518

Project Title

Your Daily Plate of Algae: The Effect of Algal Hydrophobicity on Their Ability to Grow on Solid Media

Abstract

Objectives/Goals

The main objective of this experiment was to try and determine if cell surface hydrophobicity (CSH) of algae differs among taxa, and also what role hydrophobicity plays in how well algae grow on solid media, in order to possibly begin devising a method to grow certain species on plates which did not grow well in previous experiments.

Methods/Materials

The hydrophobicity of algal cultures of 26 species and strains from seven different phyla was tested by using the MATH (Microbial Adherence To Hydrocarbon) assay. This test involved creating an emulsion with water and a nonpolar solvent (decane), and measuring the difference in light absorbance of the culture between the non-mixed and mixed samples. In addition, samples of the same algal cultures were grown on agar plates with f/2 saltwater nutrient media, and the growth of algae on these plates was compared.

Results

All of the algae demonstrated wide differences in hydrophobicities, even among similar taxa. Even the same species or strain of algae demonstrated differences in hydrophobicity measurements; older cultures usually had lower hydrophobicities than younger cultures. Some cultures with low hydrophobicities demonstrated excellent growth on solid media; however, other species with higher hydrophobicities showed very good growth as well, and many species with only moderate hydrophobicities grew very little at all.

Conclusions/Discussion

The data collected in this experiment suggest that while CSH definitely plays a role in determining the growth preference of algae, it is not the only factor, and other cell surface properties likely also influence algal ability to grow on solid media.

Summary Statement

In this project, I compared the polarity of the cell surfaces of algae with their ability to grow on agar.

Help Received

All of the experiment was conducted in the lab of Dr. Gordon Wolfe at the Department of Biological Sciences at California State University, Chico.