Proposal Sample

Title – Characterization of algal pigments using absorbance and fluorescence

Program of Study – Chemistry

Presentation Type – Print Poster

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Category – Experimental (Applied)

Abstract:

Microalgae has the potential to be used as an alternative to petroleum-based fuel necessary for transportation. Several companies are researching cost-effective ways to optimize algae growth and harvesting techniques in an effort to convert the lipid fraction of the algae biomass into various types of fuels. The ability to accurately quantify the lipid content of algae is essential to evaluating the fuel potential. Various microalgae samples and their relationships between color emitted according to the different levels of chlorophyll present can help provide a database to solidify the connection with chlorophyll and characteristics of algae.

As part of the extraction process, the organic layer (hexane) appears in a variety of different colors and is not due to the lipids produced by the algae. A validating GC/MSD method was previously developed to quantify lipid content but a new method analysis was done to quantitatively examine the color change in algae samples (Allen). Using spectrophotometry and spectrofluorometry, the color changes was found to be due to the different chlorophyll pigments the algae produced. Using the correlation between wavelength and chlorophyll type, a relationship is being investigated between particular chlorophyll produced with the amount of lipid produced within the organic and aqueous layers.

Christian worldview integration:

In today's society with much concern abounding in global warming and constant effort to conserve the present ecosystem; finding a feasible, efficient, and eco-friendly source of biofuel is vital. As Christians we are called to be good stewards of our environment. Microalgae allows for healthy use of the environment to harvest various types of biofuels. In I Peter 4:10 states that "Each of you should use whatever gift you have received to serve others, as faithful stewards of God's grace in its various form". The algae biofuels project is a gift from God's creation that we can now use to bring Glory to Him through preservation of the ecosystem. With that being said, there are many uses for algae aside from biofuels. One of which, is using the contents they produce as a natural, viable source for animal feed. During the times of creation, God gives man dominion over His creations both on land and in the sea. God created everything with a purpose in mind, including algae, specifically chlorophyll. Developing a relationship between chlorophyll and lipid content in algal species could further open doors for future study in the nature of a potential biofuel and the ways that God has purposed for it to be used.

Bibliography

Allen, Todd M., Dr. *GC/MS/FID Lipid Content from Algae Samples*. Web. 7 Mar. 2016. Digital PDF