Name(s)	**Project Number**
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Project Title

Fueling the Future: Chlorella Algae and Inexpensive Photobioreactors

Abstract

Objectives/Goals

The purpose of my experiment was to see what kind of light supported the most growth of Chlorella algae inside of a homemade, inexpensive photobioreactor.

Methods/Materials

- 1 foot of ¼ inch plastic airline tubing
- Silicone
- 1 liter glass mason jar with lid
- Electronic Scale (Only 1 necessary for project)
- 200 watt fluorescent light bulb (Only 1 is necessary)
- Fine strainer (Only 1 is necessary)
- Drill (Only 1 is necessary)
-Digital thermometer in degrees fahrenheit
- Hot glue gun (Only 1 is necessary)
(Building 9 of these)

Although I purchased the materials from a store, I designed and built the photobioreactor myself. I designed and built nine inexpensive photobioreactors and tested three with Chlorella algae under natural sunlight, three under artificial light, and three in complete darkness over a seven day period.

Results

I found that the natural sunlight supported the most growth of Chlorella algae, more than doubling its population. The artificial light also caused the algae population to grow, however, it was not a significant increase compared to the algae under natural sunlight. The entire algae population in complete darkness almost completely died off. Therefore, natural sunlight supports the most growth of Chlorella algae

Conclusions/Discussion

I built nine photobioreactors to see what kind of light supported the most growth of Chlorella algae. Repeated trials reveal that natural sunlight supports the most growth of Chlorella algae compared to artificial light and complete darkness.

Summary Statement

I found that natural sunlight supported the most growth of Chlorella algae in an inexpensive photobioreactor, as opposed to artificial light and complete darkness.

Help Received

My parents financially supported this project and a family friend, Mr. James Butler, helped me calculate my results. However, I completed the entire project myself.