

25 feb 2024

I gave my mom test presentations and i need to shorten it

24 feb 2024

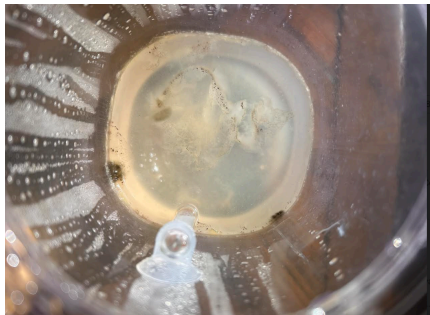
Today I added these slides on algal growth and fixed some of my project with some of the comments from Mr Rip's email.

This is what we need

Container : Algae will grow just about anywhere. But it's recommended a flask or beaker Bag for consistent results. Water and Salts: Disinfected Chlorine free water and the specific salts for growing your target organism. Nutrients: Nutrients are the molecules that the algae assemble into proteins and other functional parts of their cells. Light: Photosynthetic organisms need light. Heat: Most algae live 18-25C. We might need a heater to keep conditions comfortable

20 feb 2024

I came home from school and saw some algal growth.



Before, in January, i had put a jar will 500 ml of water and light near my furnace mixed with algal vial.

I emailed Mr. Rip and he said I would expand the algae section a bit because it is cool and you did the work but not a ton. I don't think you need methods. If a judge asks you can explain. If you go to CYSF we can revisit it.

Feb 16-19 (final)

I begun building my project and preparing it

Wednesday, Feb 14

I got my slide show back and mr rip gave me feedback

- change hypothesis, bc I have a research project
- i don't need to talk about climate change as much because its not that relevant
- give more statistical data

-Talk more about the comparisons and experiments

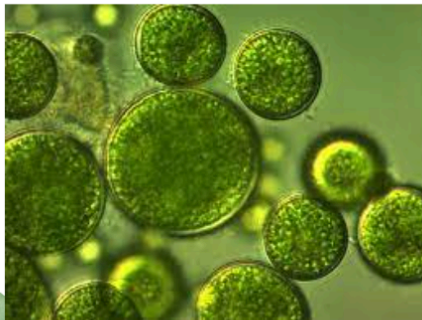
I found more data on pmc that shows that algae still used 50% less co₂

Exxonmobil is a company that promises to produce 10000 barrels of algal biofuel per day by 2025

Feb 4th



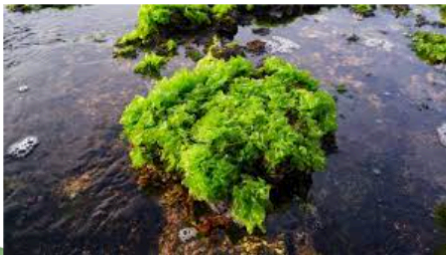
Two types of algae–Microalgae



Microalgae, are unicellular organisms that can't be seen by the naked eye. They play crucial role in ecosystem, providing food, shelter as well as gas. Just like macroalgae, they have also risen a promising biofuel factor, due to its exceptionally high lipid content and easy harvest rate. Macroalgae uses carbs to make bioethanol while microalgae uses lipids to make biodiesel, both branches of biofuel. According to recent research by the Indian Institute of Technology, microalgae can contain 15 to 77% oil, making it an attractive candidate for biodiesel.



Two types of algae–Macroalgae



Macro algae, commonly known as seaweed, are multicellular organisms, abundant in both fresh and saltwater regions. Throughout history, it has risen as popular sources of food, fertilizer or even traditional medicine due to its amazing properties. Now, in recent years it has also become apart as a promising biofuel source as not only does it have a large biomass, but also degradable, sulphur-free lipids and carbs, needed for transesterification. Also, it is a high carbon-intaking plant, meaning that it reduces carbon in the environment as well as making an alternative to it.

I am researching 2 types of algae to provide a more detailed conclusion



Jan 26th

No growth was noticed so Mr Rip suggested that algae growth needs more heat and Light. I added a LED light apart from keeping it under the main ceiling LED.

Jan 24th

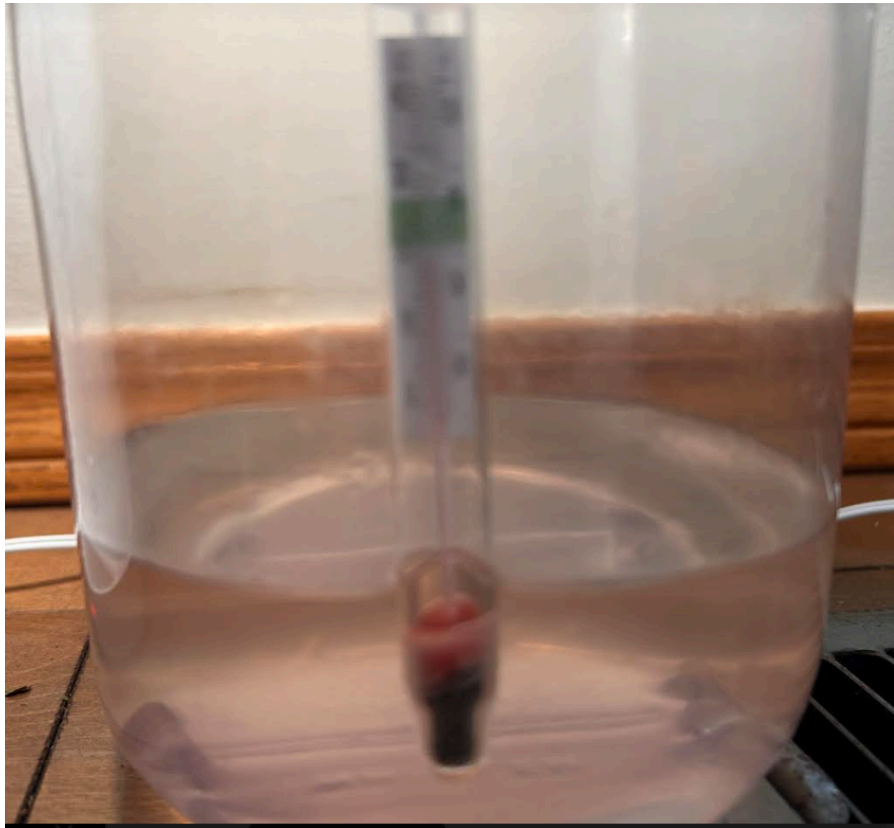
I replaced the aquarium heater and placed it near furnace vent in that way the temperature was stable and same as before and consumed less electricity(as i turned heater off)

Jan 20th

I added an aquarium heater to add a little more heat to the water.

Jan 18th

I prepared my jar with following and inserted a aquarium thermometer to measure the temperature



Jan 10th

My amazon order for algae vial arrived from a US lab via canada post.

<https://algaeresearchsupply.com/products/algae-research-supply-algae-beads>



Jan 5 2024

Notes about algal fuel

- Algae is a water based species- great for making biofuel(a fuel derived directly from living matter.)
- Bc it contains high amounts of fats which are perfect for fuels
- Grows very fast and is cultivated in diff ways
- **Transesterification**-research this
- <https://www.youtube.com/watch?v=yFpTJ5SkTdo>

Assignments 3 and 4 are handed in

Mon dec 18 (methods- assignment 2)

My project will be treated as a research project until a viable experiment is found

I will study green algae and its uses to get data for this project. I'll start by learning the disadvantages that come with normal fossil fuels and then compare how and why algae could be a better substitute. I'll support my arguments with evidence from college papers and research, providing a different perspective on the issue. I want to use this data to calculate its effectiveness, usage, and the chance to see it in the near future. This will help me in developing a project in which I examine and contrast algae biofuel.

I found a video on how to grow algae and this made me curious so me and my mom ordered algae starter tubes from amazon to try and grow it. I poured a jar with 500 ml of water and put salt and the starter in it. For some reason it didn't grow which I infer, is due to how cold it is which might have affected the growth.

Materials: algae, large plastic container, water, salt or nutrient powder

Why i think it didn't work; - maybe bc i used salt instead of real registered algal nutrient powder

- Also it was cold outside

Dec:15

City of calgary

<https://www.calgary.ca/environment/climate/net-zero-by-2050.html#:~:text=The%20City%20of%20Calgary%20has,zero%20GHG%20emissions%20by%202050.>

Sunday dec 10--assignment 1

Question: Can I develop a greener alternative to fossil fuels using algae and other environmentally friendly materials?

Hypothesis; I hypothesize that it would be possible for algae to produce biofuels, given the substantial lipid content in algae that contains valuable fatty acids which act as the base for fuel.

My concern however lies at the efficiency of the fuel, as conventional fossil fuels usually are abundant while algae can only be accessed during certain times of the year which could further ruin the efficiency of the fuel. Moreover, fossil fuels have been heavily researched while the concept of algal biofuels is considered very new as scientists are still researching and developing the topic.

Variables

Independent: Traditional Fossil fuel compared to algal biofuel

Dependent: the effect on the environment

Controlled: N/A

Later, i added another question,

Which type of algae produces the best biofuel?

Here is my hypothesis for that For the second question, as we will learn, there are 2 types of popular algae sources, micro and macro. Micro produces biodiesel while Macro produces bioethanol, both branches of biofuel. I believe the macro would be better as it is larger as well easier to harvest making it more efficient in terms of production..