Algaethane 2.0: Enzymatic Extraction of Varying Algae Fuels

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As fossil fuels have been sent back to the head of the line for depletion, there is a need to continue to find alternative fuels. Algae has become a nuisance. In reaction to increased frequency and concentration of wide-ranging environmental conditions, algae grows prolifically into HABs or Harmful Algae Blooms that can suffocate the oxygen out of an aquatic environment, and can be dangerous to life in water and on land. However, Algae can be turned into numerous cleaner, sustainable fuels, the focus of this project; to determine which algae will produce the most flammable gas; Chlorella, Spirulina, Rhodophyta, Kelp or Blue Algae using an enzymatic separation treatment. The different algae were treated with enzymes, nutrients and buffers, then set in a 50C environment for several weeks, the gas output measured through measuring the circumference of the capture balloon, and the liquid fuel output measured through alcohol and sugar refractometers every other day. At the end, the balloon contents were bubbled into soapy water, and ignited to determine how much fuel type gas was produced. After four weeks of gas collection, it was determined that Rhodophyta, followed by Chlorella and blue algae produced the most gas and the most fuel qualifiable gas, however, all the algae products produced some gas. Chlorella, Rhodophyta and Spirulina produced the most liquid sugar to fuel reaction, therefore indicating that with limited processes, some algae types are a viable faster alternative fuel source.

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