Optimization of the Aerobic Cultivation of Euglena to Be Used in Environmentally Feasible Production of Alternative Fuel

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In today's society, gasoline is becoming more expensive and harder to find, causing scientists to look for alternative fuels. One of these alternative fuels is biodiesel converted from oil extracted from algae. The problem, however, is that there are multiple ways to extract the oil from the algae these ways include a pressing method, shock, and adding liquid carbon dioxide. The effects of additives to the algae during the growth stage will also radically change the amount of oil produced. The purpose of the project is to discover if adding liquid carbon dioxide booster will cause Euglena to produce more oil during growth and affect the combustion of the biodiesel converted from that oil. The hypothesis is that adding liquid carbon dioxide booster will help in the production of oil and in the combustion of the biodiesel allowing the biodiesel to create a much large amount of heat energy. To test the biodiesel's rate of combustion, a cotton ball will be soaked in the biodiesel and burned. This burning cotton ball will be used to measure a temperature change in water that will later be converted into heat energy in Joules. The end results and data collected from the trials showed the algae with liquid carbon dioxide booster added produced more oil. The biodiesel with added liquid carbon dioxide booster did produce more heat energy. The creation of this biodiesel from Euglena algae will impact the environment in a positive manner, due to the minimal impact the conversion process has on the environment. Algal biodiesel is a renewable resource that can be cultivated and created in a laboratory reducing the carbon footprint of this alternative fuel source.

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