The Effect of the Type of Chemical Solvent on the Amount of Crude Algal Oil Extracted for Biofuel Production

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With fossil fuels that are depleting, a new source of energy has to be found. Algae, nature's oldest, fastest growing plant, is a source with hope. The purpose of this project was to discover how the type of chemical solvent affected the amount of crude algal lipids extracted. The hypothesis was the chemical solvent methyl alcohol will produce the greatest mass of crude algal lipids because it has the lowest molar mass and is the smallest in size giving it the ability to fit through holes in the cell wall causing it to break it down easier. The effect of the type of chemical solvent on the amount of crude algal oil extracted was determined by using 75 percent solution of three alcohols, isopropyl, methyl, ethyl alcohol, combined with 3 grams of pond algae in a jar. After 24 hours, the lipids were pipetted out and weighed. The results collected showed that Isopropyl alcohol could extract the most lipids. It had an average of 0.84 grams. Methyl alcohol produced an average of 0.657 grams, and ethyl alcohol produced an average of 0.554 grams. The results showed that the hypothesis was not supported. This happened because the isopropyl alcohol has more carbon and hydrogen atoms to react with the lipids after the cell wall has been broken to produce isopropyl esters. To further understand this topic, future research could include: using more types of algae, using different chemicals, and studying how the growth rates affect the lipid extraction with isopropyl alcohol.