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***Evaluation of cetane values of glycerolipids extracted from algae
Scenedesmus dimorphus grown in various salinity
concentrations using gas chromatography and mass
spectrometry (GC-MS)***

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Abstract

Algae's ability to store lipids, renewability, and potentially safer for the environment has made it a promising alternative fuel source. An industry rating for a biofuel's potential is the cetane value, which is a measure of a fuel's quality related to various glycerolipid concentrations. Growing conditions will affect lipid profile in algae, thereby affecting the cetane value. This project will attempt to identify changes in the cetane value of the algae *Scenedesmus dimorphus* grown in various salinity concentrations. *Scenedesmus dimorphus* is the algae chosen for this experiment because of its ability to rapidly grow under harsh conditions. In this experiment the growth conditions were controlled in bioreactors and shaker baths.

Total lipids were extracted from dry mass algae with the Bligh-Dyer method, which allows for the extraction of the glycerolipids with the solid phase extraction method. Upon the final extraction, a transesterification reaction is carried out in order to convert the glycerolipids into FAME (fatty acid methyl esters), which allows the GC-MS (gas chromatography and mass spectrometry) instrument to better quantify the lipid concentration.