Micro-algae Biomass via Chlorella vulgaris to Replace Crude Oils in Order to Overcome Gaseous and Aerosol Pollutants

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As the world heavily relies on crude oils such as diesel fuel to fulfill the needs of everyday life, aerosol and gaseous pollutants are being emitted. Algae biofuel can help control and mitigate emissions, allowing for a better quality of life around the world by developing the fuel industry's future and adopting a low carbon footprint. Chlorella vulgaris was inoculated with a BBM solution. The algae was harvested to produce the heavy lipid content. During the lipid extraction process, the algae's composition was separated to isolate the lipids from the additional components of the algae. The lipids were then refined through the transesterification process, the catalyzed reaction of oil or fat with alcohol to yield an ester. The final product was identified as FAME(Fatty Acid Methyl Esters). This was the final product that is biodiesel. The FAME was characterized and analyzed by the profiles of the acids synthesized. This provided the researcher with enough information to calculate the FAME content of the algae to assess the sustainability of C. vulgaris. This research suggested that the heavy and oily lipids of algae may produce a biodiesel that is suitable enough to replace the diesel that society relies on. The FAME then represented the potential of micro-algal biofuels.

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