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Algal Medium Chain Length Fatty Acids and Hydrocarbons

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Inventors

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Invention Description

The availability of aviation fuel is subject to potentially unstable oil markets. Oil rich crops and algae are promising biological systems for cost-effective and sustainable production of biodiesel, but biodiesel produced from currently available oil crop-based feedstock is not suitable for aviation fuel because of its lower energy density and unacceptable cold flow features. There is thus a need for a feedstock and process to produce oils with higher energy density (high concentrations of medium chain fatty acids) that can be converted into aviation fuels.

Researchers at Arizona State University have identified a particular algal strains and a cultivation process that enables the production of medium chain (C 12 - C16) fatty acids (MCFA). The abundance of MCFA in the cellular neutral lipids can reduce or eliminate the necessity of cracking the crude oil and thus reduce the cost of refinement into kerosene or aviation fuel. These strains and processes may be able to be used as a sustainable and cost effective feedstock for oils to be used in the production of fuels for aviation.

Potential Applications

- Feedstock for production of transportation and jet/aviation fuel

Intellectual Property Status:

Patent Pending

Benefits and Advantages

- High lipid/oil content- eliminates or reduces the need to crack the carbon molecules to the proper chain length for higher energy density
- High specific growth rates
- Ability to thrive in saline/brackish water and utilize nutrients (N, P, and C02) from waste-streams
- Uses marginal lands for wide scale production all year round
- Algae biomass contains usable carbohydrates and proteins (i.e. fermented for ethanol, used as animal feed, or as organic fertilizer)

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