

CHARACTERIZATION AND OPTIMIZATION OF MICROALGAE FOR BIODIESEL PRODUCTION

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ABSTRACT

In context of climatic changes and soaring prices per barrel of petroleum, renewable carbon neutral, transport fuels are needed to displace petroleum derived transport fuel, which contribute to global warming and are of limited availability. Biodiesel derived from oil crop is a potential renewable and carbon neutral alternative to petroleum fuel. Unfortunately, biodiesel from oil crop, waste cooking oil and animal fat cannot realistically satisfy even a small fraction of the existing demand for transport fuel. Biodiesel from microalgae seem to be the most promising renewable biofuel that has the potential to completely displace petroleum-derived transport fuel without adversely affecting supply of food and other crops products. Like plants, microalgae use sunlight to produce oil but they do so more efficiently than crop plants. Oil productivity of many microalgae greatly exceeds the oil productivity of the best producing oil crops. This study was undertaken to prove that common occurring microalgae Chlorella species and Scenedesmus dimorphus can produce lipid which is subsequently converted into biodiesel by alkali catalyzed transesterification. This study also includes optimization of medium by Plackett-Burman experimental design to find out the significant variable.

Key words: Biofuels, Biodiesel, Microalgae, Algal oil, Photobioreactor, Transesterification