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DEPARTMENT OF BIOTECHNOLOGY

A Project Report On

"ISOLATION AND CULTIVATION OF MICROALGAE IN VARIOUS BIOREACTORS FOR THE BIOFUEL PRODUCTION"

GUIDE

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ABSTRACT

Biodiesel is biodegradable, less NO_x, CO and CO2 emissions. Continued use of petroleum sourced fuels is now widely recognized as unsustainable because of depleting supplies and the contribution of these fuels to the accumulation of carbon dioxide in the environment. Renewable, carbon neutral, transport fuels are necessary for environmental and economic sustainability. Sustainable production of renewable energy is being hotly debated globally since it is increasingly understood that first generation biofuels, primarily produced from food crops and mostly oil seeds are limited in their ability to achieve targets for biofuel production, climate change mitigation and economic growth. These concerns have increased the interest in developing second generation biofuels produced from non-food feed stocks such as microalgae, which potentially offer greatest opportunities in the longer term. Microalgae have emerged as one of the most promising sources for biodiesel production. It can be inferred that microalgae grown in CO2-enriched air can be converted to oily substances. Such an approach can contribute to solve major problems of air pollution resulting from CO2 evolution and future crisis due to a shortage of energy sources. This study was undertaken to prove that common occurring microalgae Euglena gracilis can produce oil which subsequently converted to biodiesel (ester) by alkali catalyzed transesterification. The study is also on the construction of bioreactor with different materials of construction and different light and aeration conditions. The growth of microalgae in different media was also undertaken as a part of this study.

Key words: Algal oil, Biofuels, Biodiesel, Microalgae, Photo-bioreactors, Transesterification.