PROJECT REPORT ON

PRODUCTION OF BIOFUEL FROM WASTE WATER ALGAE USING VERTICAL REACTOR SYSTEM (37S_B_BE_044)

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ABSTRACT

Microalgae are widely recognized as a source for biofuel production as a renewable source of energy. They are exceedingly rich in oil, which can be converted to biofuel. This project deals with one of the method to enhance the Biomass concentration and lipid content in microalgae. Microalgae, *Chlorella sps*, was grown autotrophically in vertical bioreactor for efficiency. Under high light intensity, a vertical reactor experience less photo inhibition and under low intensity, a vertical orientation capture more reflected light. A vertical orientation also requires less land area. The growth of the culture in a fabricated vertical reactor was found best at a temp 25^0 C, a light intensity, with a light and dark period of 12:12 hours per day. And also the effect of different concentrations of nitrogen source (0-0.4 g /L KNO_3) on growth and lipid content was studied.

As the nitrate concentration in the medium decreased, biomass production also decreased but the lipid content increased. Moreover, at the same concentration of nitrate source, lipid tends to accumulate more in stationary phase in comparison to exponential phase. Highest lipid accumulation of 18% was recorded in the culture with 0.05 g/ L KNO_3, which is one- fourth of basal nitrogen source concentration. The present study suggested that nitrogen starvation is the effective approach to enhance lipid for biofuel production.