

Comparison of Lipid Productivities of Some Marine Microalgal Strains

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Some microalgae are known to accumulate large amount of lipids, which can be converted to biodiesel. Lipid accumulation in microalgae is often a result of arrested growth due to certain conditions. In this experiment, three microalgae, *Tetraselmis* sp. KCTC12429BP, *Dunaliella tertiolecta* LB999, *Nannochloropsis oculata* K-1281 were compared for lipid productivity. Three microalgae were cultivated in bubble columns with 400 mL of MBL with f/2-Si medium. 2% CO₂ gas was supplied at 0.1 vvm with light intensity of 80±10 $\mu\text{E}/\text{m}^2/\text{sec}$. The highest FAME contents were 30.8%, 9.6%, and 6.1% for *N. oculata*, *Tetraselmis* sp., and *D. tertiolecta*, respectively. However, the lipid productivity was rather similar as 13 mg/L/day and 19 mg/L/day in *N. oculata* and *Tetraselmis* sp. Although the lipid content was much higher in *N. oculata*, the difference in biomass productivity resulted in similar lipid productivity. From the view of integrated biorefinery, *Tetraselmis* biomass is more attractive feedstock than *N. oculata* or *D. tertiolecta* biomass due to larger biomass provided. This study suggests that when selecting the microalgal species for large-scale cultivation, high biomass productivity should be considered especially as well as maximum lipid content.