

Cell Biomass and Lipid Productivities of *Meyerella planktonica* under Autotrophic and Heterotrophic Growth Conditions

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Abstract : Microalgae *Meyerella planktonica* is a potential biofuel source because it can grow in bulk in either autotrophic or heterotrophic condition. However, the quantitative growth of this algal type is still low as it tends to precipitates on the bottom. Beside, the lipid concentration is still low when grown in autotrophic condition. In contrast, heterotrophic condition can enhance the lipid concentration. The combination of autotrophic condition and agitation treatment was conducted to increase the density of the culture. On the other hand, a heterotrophic condition was set up to raise the lipid production. A two-stage experiment was applied to increase the density at the first step and to increase the lipid concentration in the next step. The autotrophic condition resulted higher density but lower lipid concentration compared to heterotrophic one. The agitation treatment produced higher density in both autotrophic and heterotrophic conditions. The two-stage experiment managed to enhance the density during the autotrophic stage and the lipid concentration during the heterotrophic stage. The highest yield was performed by using 0.4% v/v glycerol as a carbon source ($2.9 \pm 0.016 \times 10^6$ cells w/w) attained 7 days after the heterotrophic stage began. The lipid concentration was stable starting from day 7.

Keywords : agitation, glycerol, heterotrophic, lipid productivity, *Meyerella planktonica*

Conference Title : ICABBBE 2015 : International Conference on Agricultural, Biotechnology, Biological and Biosystems Engineering

Conference Location : Berlin, Germany

Conference Dates : May 21-22, 2015