

Optimization of Direct-transesterification for Biodiesel Production from Microalgal Biomass of *Dunaliella tertiolecta* and *Tetraselmis* sp최창용, 류영진, 임상민, 이철균[†]

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As the price of conventional fossil fuels continues to escalate, so-called alternative fuels have become more attractive. Marine microalgae can be transformed into bioenergy such as biodiesel, bioethanol, biohydrogen and etc. However, the various unit operation steps is involved in biodiesel production processes such as drying, lipid extraction, transesterification and biodiesel refining. The direct-transesterification has an advantage over other alternative transesterification methods since lipid extraction and transesterification can be carried out in one step. *Dunaliella tertiolecta* and *Tetraselmis* sp. In order to optimize the direct-transesterification condition, the overall efficiency was analyzed, considering reaction time, concentration of catalyst (sulfuric acid) and the amount of methanol volume. As a results, maximum FAME content was obtained at 64°C and 3% of concentration of sulfuric acid. Optimal methanol volume and reaction time of direct-transesterification are 10 vol. (v/w) methanol and 3 h at the *Dunaliella tertiolecta*, and 7.5 vol. (v/w) and 5 h at the *Tetraselmis* sp. This results will help to design mass production of biodiesel from *Dunaliella tertiolecta* and *Tetraselmis* sp.