

Cell disruption and lipid extraction from wet Nannochloropsis sp. using High Shear Mixer

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Lipid extraction from wet microalgae using organic solvent for biodiesel production has low extraction yield because water prevents contact between the lipid and organic solvent. Thus cell disruption pretreatment such as high pressure homogenizer and Bead mill disruption is required to separate lipid from cell, however, those methods require high energy consumption which reduce economic feasibility of biodiesel production. To solve this problem, we present a mechanical cell disruption method using High shear mixer (HSM) which energy consumption is much lower than other mechanical disruption methods. In this study, we used 20 g/L of wet Nannochloropsis sp. and treated the biomass with the HSM for 10 minutes at 15,000 rpm with various solvents including organic solvent, alcohol and co-solvent. As a result, we obtained 72% of FAME yield using HSM and ethanol.