

Supercritical CO₂ lipid extraction from *Scenedesmus* sp.: Effect of co-solvents on the yield of biodiesel-convertible lipid fractions

최경석, 곽 현*, 박동준, 류재훈¹, 배성열¹

한울엔지니어링; ¹한양대학교

(kh@hanwoul.com*)

In the present work, microalgae lipid extractions were performed using supercritical carbon dioxide (SC-CO₂) and conventional organic solvent for biodiesel-convertible lipid fraction. The characterization of extracted lipid was investigated using various analytical techniques, including GC-MS, FT-IR, and ICP-AES, and the results were compared. Organic solvents as a co-solvent in SC-CO₂ extraction were applied to reduce harsh extraction condition. The experimental results indicated that SC-CO₂ extraction was superior to other extraction technique in terms of selectivity to triglyceride; whereas, organic solvent extraction allowed high lipid yield. Furthermore, co-solvent could reduce the harsh conditions of SC-CO₂ extraction, and the highest selectivity and yield of extracted lipid were attained using SC-CO₂ with co-solvents. This work was supported by the New & Renewable Energy Core Technology Program of the Korea Institute of Energy Technology Evaluation and Planning(KETEP) granted financial resource from the Ministry of Trade, Industry & Energy, Republic of Korea. (No. 20133030090820)