

Review paper on cell membrane electroporation of Microalgae using Electric Field Treatment Method for Microalgae Lipid extraction

Abstract

The paper reviews the recent studies on the lipid extraction of microalgae that mainly highlighted on the cell disruption method using variety of microalgae species. Selection of cell disruption method and devices are crucial in order to achieve the highest extraction percentage of lipid and other valuable intracellular (proteins, carotenoids and chlorophylls) from microalgae cell. Pulsed electric field (PEF) and electrochemical lysis methods were found to be potential for enhancing the extraction efficiencies either conducted in single step extraction or used as pre-treatment followed by conventional extraction method. The PEF technology capable to extract lipid as high as 75%. While, electrochemical lysis treatment capable to extract lipid approximately 93% using Stainless Steel (SS) and Ti/IrO₂ as the cathode and anode electrode respectively. PEF technology and electrochemical lysis are still considered to be a new method for microalgae lipid extraction and further investigation can still be done for better improvement of the system.