

Extraction of Protein from Microalgae Using Low Pulsed Electric Field

Abstract

Extraction of specific biological components from microalgae is often prevented by the intrinsic rigidity of the cell wall. Therefore, cell disruption is required to permit access to the internal components of the cells. The purpose of this study is to extract protein from microalgae using low Pulsed Electric Field (PEF). *Chlorella vulgaris*, *Scenedesmus* sp. and *Chlorococcum* sp. were treated with PEF (80 V/cm) in silver/silver and stainless-steel/stainless-steel parallel electrodes treatment chambers for 10 minutes. Treated samples went through solid/liquid separation by centrifugation and the supernatants were further analyzed by Fourier Transform infrared (FTIR) spectroscopy. Results showed that overheating occurred at the negative terminal of the electrode causing damages to cells during treatment. Low pulse duty cycle was able to reduce the overheating effect during PEF treatment. From FTIR spectra, cellulose and protein were detected in the supernatant, indicating that the cells were successfully lysed and some protein managed to diffuse out of the cells during the treatment.