

Protein and Lipid Extraction from Microalgae with Ultrasound Assisted Osmotic Shock Method

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Abstract : Microalgae has a potential to be utilized as food and natural colorant. The microalgae components consists of three main parts, these are lipid, protein, and carbohydrate. Crucial step in producing lipid and protein from microalgae is extraction. Microalgae has high water level (70-90%), it causes drying process of biomass needs much more energy and also has potential to distract lipid and protein from microalgae. Extraction of lipid from wet biomass is able to take place efficiently with cell disruption of microalgae by osmotic shock method. In this study, osmotic shock method was going to be integrated with ultrasound to maximalize the extraction yield of lipid and protein from wet biomass *Spirulina* sp. with osmotic shock method assisted ultrasound. This study consisted of two steps, these were osmotic shock process toward wet biomass and ultrasound extraction assisted. NaCl solution was used as osmotic agent, with the variation of concentrations were 10%, 20%, and 30%. Extraction was conducted in 40°C for 20 minutes with frequency of ultrasound wave was 40kHz. The optimal yield of protein (2.7%) and (lipid 38%) were achieved at 20% osmotic agent concentration.

Keywords : extraction, lipid, osmotic shock, protein, ultrasound

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