عنوان مقاله:

Evaluation of factors affecting on lipid extraction for recovery of fatty acids from Nannochloropsis oculata micro-algae to biodiesel production

محل انتشار:

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خلاصه مقاله:

Background: This study aimed at determining the appropriate method for dewatering and drying biomass and selecting a suitable organic solvent for lipid extraction.Methods: Nannochloropsis Oculata was cultured in Gillard F/2 medium and after reaching the end of the stationary growth phase, algal biomass was separated from aqueous by centrifuge and dried through three methods: Oven, Air-dried and Lyophilized. Soxhlet apparatus achieved lipid extraction of all samples: diethyl ether, n-hexane and n-pentane using three solvents. At each stage, the quantity and quality of the extracted lipids were determined by Gas Chromatography.Results: In all three drying methods, palmitic acid and palmitoleic acid, and most significantly fatty acid composition of microalgae were extracted. The fatty acid composition of palmitic acid extracted by Diethyl ether was significantly more than the other two solvents. Maximum production of triglyceride was observed in Lyophilized and air-dried microalgae where lipid extraction was performed with diethyl ether solvents and are 75.03% and 76.72% of fatty acid.Conclusion: The use of Lyophilized method for dewatering and drying of biomass and Diethyl ether as solvent for the extraction of lipids from biomass, studied in this paper, as compared to other methods, had higher yields and researches proved that the production of biodiesel from microalgae's lipid was more efficient.

کلمات کلیدی:

Nannochloropsis oculata, Lipid, Solvent, Biomass, Biodiesel