عنوان مقاله:

Growth and lipid accumulation in response to different cultivation temperatures in Nannochloropsis oculata for biodiesel production

محل انتشار:

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خلاصه مقاله:

Background: Microalgal lipid is a promising feedstock for biodiesel production. The aim of the present study was to investigate the effects of cultivation temperature on the growth and lipid accumulation properties of Nannochloropsis oculata microalgae.Methods: Nannochloropsis oculatacan grow in a wide range of temperatures (5 ~ 35°C). Late in the stationary growth phase of microalgae, biomass production and lipid accumulation were measured. The methanol-chloroform extraction method was used to extract total lipids from dried cells. The direct esterification method was used to measure fatty acids. Constituents were identified by gas chromatography.Results: The results show that the maximum specific growth rate at 20°C was 0.1569 day-1, and the maximum biomass production of microalgae at 25°C was 2.2667 g/L. The highest percentage of biomass conversion into lipid (35.71%) occurred at 30°C. Maximum lipid productivity was seen at temperatures of 15°C, 20°C, and 25°C, but the analysis of fatty acids in the three temperatures shownare maximum accumulations of triglycerides in the microalgae cells at 20°C and 25°C.Conclusion: In the cultivation of Nannochloropsis oculata, the optimal temperature range for maximum efficiency in biodiesel production from lipids is 20°C to 25°C.

کلمات کلیدی:

Freshwater microalga, Nannochloropsis oculata, Cultivation temperature, Lipid accumulation