

Triacylglycerol profile of marine microalga Skeletonema costatum from the Saintmartin Island (Bangladesh): Evaluation of its potentiality as biofuel feedstock

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One of the greatest challenges for the society in the 21st century is to meet the growing demand for energy for transportation. heating, and industrial processes which are significantly related to Greenhouse Effect and to provide raw material for the industry in a sustainable way. Also increasing concern for the security of the oil supply has been evidenced by increasing oil as well as food prices. In order to mitigate climate change without adversely affecting global energy supply, there is growing interest in the possibility of producing transportation fuels from renewable sources.

Marine microalgae are the most promising oil sources for making biofuels, which can grow very rapidly and convert solar energy to chemical energy via CO2 fixation. The fatty acid profile of almost all the microalgal oil is suitable for the synthesis of biofuel. In this research, fatty acid and lipid contents of Bangladeshi strains of marine microalgae Skeletonema costatum was performed. For this, the crude oil was extracted by Soxhlet extraction method, using three most common solvent systems, mixture pure hexane and of CHCl3: MeOH (2:1) and hexane: EtOH (3:1) one by one. Highest oil recovery (15.37%) came from CHCl3: MeOH (2:1) solvent system from dry biomass whereas the lowest (2.49%) came from nhexane from wet biomass. The qualitative analysis of the extracted oil by GC/MS analysis revealed that it contained significant amount of myristic acid (C14:0), palmitic acid (C16:0), stearic acid (C18:0), and palmitoleic acid (C16:1). It indicated also presence of hexadecatrienoic acid. benzenedicarboxylic acid, oleic acid. arachidonic acid, eicosapentaenoic acid (EPA), 9-Octadecenoic acid methyl ester (C19H36O2), and so forth. The obtained fatty acid profile indicates high potentiality of S.costatum species to be used as promising biofuel feedstock a little improvisation and substantially it can replace diesel in near future.

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