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Review

A review on bioenergy and bioactive compounds from microalgae and macroalgae-sustainable energy perspective

M.P. Sudhakar [a], B. Ramesh Kumar [b], Thangavel Mathimani [c], Kulanthaiyesu Arunkumar [d, *]

[a] Marine Biotechnology, National Institute of Ocean Technology, Chennai, 600100, India
[b] Plant Metabolic Pathway Laboratory, RGSOIPL, Indian Institute of Technology Kharagpur, Kharagpur, West Bengal, 721302, India
[c] Department of Energy and Environment, National Institute of Technology, Tiruchirappalli, 620015, Tamil Nadu, India
[d] Department of Plant Science, Central University of Kerala, Riverside Transit Campus, Padanakkad, 671314, Kerala, India

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ABSTRACT

Though microalgae and macroalgae are considered as a potential feedstock for biofuel and industrially important co-products extraction, still there are several research barriers on the commercialization of algae-based fuels and products. Based on these bottlenecks, this review underpins the biochemical composition of micro- and macroalgae regarding biofuel production and bioactive compounds extraction. Further, the second chapter summarizes the various cultivation systems for rapid generation of macroalgal biomass. Micro- and macroalgae are untapped for bioenergy production to assess the feasibility of future green fuel sustainability. In general, algae were considered as a potential source for various applications worldwide owing to their rich and enormous bioactive potential. Therefore, a separate section devoted to recognize the crucial role and biological activities of primary and secondary metabolites in micro- and macroalgal species, their significant contribution as functional foods or therapeutic agents in nutraceutical and pharmaceutical industries. The extensive discussion on the phenolics, flavonoids and pharmacological properties of other bioactive compounds extracted from microalgae has been provided. Further, carbohydrates, proteins (phycobiliproteins and phycoerythrin) and their organic extraction from macroalgal strains (seaweeds) were well described. This review paper describes the importance of bioactive compounds and their value in the various other markets besides biofuel production.

Contents

* Corresponding author. Department of Plant Science, School of Biological Sciences, Central University of Kerala, Periye, 671 314, Kasaragod, Kerala, India.
E-mail address: arunkumark@cukerala.ac.in (K. Arunkumar).

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