

Innovations in Biotechnology

Microalgal Biotechnology

Bioprospecting Microalgae for
Functional Metabolites towards
Commercial and Sustainable Applications



Jeyabalan Sangeetha | Svetlana Codreanu
Devarajan Thangadurai
Editors



CRC Press
Taylor & Francis Group


APPLE ACADEMIC PRESS

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Document type

Book Chapter

Source type

Book

ISBN

978-100077210-4, 978-177491237-9

Publisher

Apple Academic Press

Original language

English


[View less](#) ^

Recent developments in biodiesel production from heterotrophic microalgae: Insights and future prospects

[Raut, Gouri^a](#);

[Khot, Mahesh^b](#);

[Kamat, Srijay^c](#)

 Save all to author list

^a Bioenergy Division, Agharkar Research Institute, Pune, Maharashtra, 411004, India

^b Laboratorio de Recursos Renovables, Centro de Biotecnología, Universidad de Concepcion, Concepcion, 4030000, Chile

^c Department of Biotechnology, Goa University, Goa, 403206, India

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Abstract

Sustainable Development

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Abstract

Heterotrophic microalgae have biotechnological advantages as sustainable resources of high-value compounds, ranging from therapeutic proteins to fatty acid-based fuels. The dark cultivation of lipid-accumulating micro-algae on organic compounds as simple as glucose is being investigated as a promising alternative to biodiesel and other biofuels. A wide range of literature is available on the production and application of microalgal lipids. In this chapter, critical aspects of algal lipids in producing biodiesel are described systematically. The production of triglycerides as feedstock for biodiesel is summarized for different types of microalgae grown on cheap, low-cost renewable carbon sources. The choice of feedstock and fuel properties of the end product are two critical factors in the biomass-to-biodiesel production process which are in turn determined by the strain involved and growth substrate. Strategies to improve productivity, e.g., optimization of bioprocess, direct (one-step) transesterification, and genetic engineering are discussed. The importance of physicochemical fuel properties is also highlighted. © 2023 Apple Academic Press, Inc. Co-published with CRC Press (Taylor & Francis). All rights reserved.