

Nanotechnology in the Life Sciences

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Bioprospecting
Algae
for Nanosized
Materials

 Springer

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Microalgal Nanotechnology for the Remediation of Environmental Pollutants

[Sonam Dwivedi](#) & [Iffat Zareen Ahmad](#) 

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Abstract

Microalgae are alluring biotechnological tool to detoxify the hazardous pollutants present in the environment. Environmental toxic waste is hazardous and causes serious problem to the environment as well as organisms. The microalgal biomass has the potential to remediate these pollutants from the contamination sites through different processes such as biodegradation, accumulation, and immobilization. Microalgal growth is inexpensive because they use sunlight and carbon dioxide; therefore, globally microalgal environmental remediation market found that this industry showed significant growth over last few years and anticipated a continuous growth. Furthermore, research need to be explored for the remediation process to make it more advantageous, economic, feasible, widely accepted by the public, and also elevated level reduced contaminants. This chapter highlights the remediation of environmental pollutants from different sources of contamination using microalgal nanotechnology.

Keywords

Microalgae

Environment


Pollutant

Remediation

Nanoparticles

Contaminants

Nanoformulations Loaded with Microalgal Bioactive Compounds for Disease Therapy

Heena Tabassum & Iffat Zareen Ahmad 

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Abstract

Recent developments in the use of nanoformulations are evolving in the nanobiotechnology area for synthesis of drug. Recently, due to the drawbacks of physical and chemical synthesis, which include toxic yields, time and energy consumption and high cost, focus has shifted towards biological synthesis. Many natural sources, comprising cyanobacteria, algae, fungi and higher plants, are useful in green synthetic processes. Microalgae, because of their ability to absorb heavy particles from their surroundings, are amongst the most advantageous natural candidates used in the biosynthesis of nanoformulations. They are storehouse of a number of bioactive compounds which can act as reducing and stabilizing agents, including pigments and enzymes. Due to solubility problems, not even 10% of microalgal bioactive components have reached marketed platforms. They should be considered as a possible source of natural products for drug development and delivery systems, considering these factors. An emerging approach to the production of new cancer drugs may be in the form of nanoformulations. This chapter throws light on latest studies on microalgae-based metabolites and also their medical uses. This chapter also considers different types of nanoformulations, various strategies of synthesis, execution of new drugs, drawbacks and commercial aspects associated with the application of microalgae for manufacturing and medical purposes.

Keywords

Microalgae

Bioactive compounds

Nanoformulations

Diseases