

Study on a Potential of Microalgae Biomass Producing Biopolymer Material: A Review

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Abstract

Researchers, scientists, and engineers are interested in studying microalgae because of their high biotechnological potential for sustainable renewable energy and as a source of biofuels, biopolymers, electrical power generation, and pharmaceutical and cosmetic resources. Algae microorganisms grow in ponds, lakes, and rivers, as well as in custom-designed vessels/tubes known as photo-bioreactors, where they produce biomass, organic matter, and can be used as a sustainable fuel resource. Microalgae has been identified as a green energy resource capable of mitigating greenhouse gas (GHG) emissions, primarily CO₂ gas, and is regarded as a promising approach to addressing Global Warming issues and climate change. On the other hand, global co-products from fossil resources, such as plastic waste petroleum base, are increasing dramatically and causing global environmental pollution. There is a great deal of interest in developing a technology to address the global incremental petroleum-based plastic products, which are currently difficult to control. Microalgae is a promising and new technology that has the potential to be improved further to produce biodegradable plastic and polymers that will be as sustainable and alternative sources to fossil-based plastic in the market share. The research focuses on bioplastic technology derived from microalgae spies and emphasizes an accurate and in-depth understanding of the process and application areas.

Keywords: Microalgal biomass; Biofuels; Biopolymer; Biodegradable plastic; Algae photo-bioreactor.