

A Comprehensive Review on Microalgae: A Potential Low-Cost Green Option for Manufacturing of Nanoparticles

Mehreen M. Dawre*¹, Sanjay B. Sonawale², Reshma D. Prakshale²,
Shahjahan T. Shakeel¹, Sachin V. Bangale³

D. G. Tatkare Mahavidyalay of Arts, Sci., Comm., IT., & BMS., Mangaon-Raigad, India¹

D. E. Society's Kirti M. Doongursee College of Arts Science and Commerce, Dadar West, Mumbai, India²

UG and PG Department of Chemistry, G.M.VedakColloge of Science, Tala-Raigad, Maharashtra, India³

Corresponding Author: Sachin V. Bangale, Email ID: sachinbangale98@gmail.com

Abstract: *An environmentally friendly substitute for the conventional chemical methods of synthesis is the recent development of nanoparticle production from biological sources. Microalgae stand out among the many green sources investigated for their prominent advantages in terms of their ease of growth and capacity to endure harsh pH and temperature conditions, making these organisms as potential low-cost, environmentally friendly machinery for the mass synthesis of nanoparticles. Algae are attracting a lot of attention as potential renewable alternatives to the conventional chemical synthesis because of their capacity to treat wastewater, production of a wide range of commercially significant nanomaterials, economically viable growth-associated products, and inherent carbon reduction potentials. The commercial large-scale use of these biological agents is still a loose concept, despite the fact that numerous reviews have emphasized the significance of algal bio factories. It is important that individual research findings on the prospects of algae for nanoparticle production be updated and comprehended together in a way to facilitate scale-up and commercialization of the technology. This is because there is an urgent need to develop efficient alternatives to the currently used sources for nanoparticle synthesis and environmental sustainability. The current mini review gives a brief overview of the development and benefits of microalgae, as well as the most recent developments in the use of microalgae in the biogenesis of nanoparticles and quantum dots. It also makes note of the biosensing and environmental pollution detection capabilities of the nanomaterials derived from microalgae.*

Keywords: Biosynthesis, Nanoparticles, Microalgae, Cost-effective, Green factory

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