DOI: https://doi.org/10.36094/sc.v92.2026.Biogenic_Synthesis_of_ZnO_Nanoparticles.Dey.368

ARTICLE

Sci. and Cult. 92 (5–6) : 368-370 (2026)

BIOGENIC SYNTHESIS OF ZNO NANOPARTICLES AS A STRATEGIC LOW-COST ENVIRONMENTAL TECHNOLOGY FOR ADVANCING RURAL SUSTAINABILITY

CHANDRIMA DEY[1], SAYANTAN BASU[1], SNEHA GHOSH[1], PRIYANKA SEN GUHA[1], AND NIRLIPTA SAHA[1]*

Nanobiotechnology has rapidly expanded with diverse applications in medicine, agriculture, electronics, and food industries, leading to increased production of nanomaterials and concerns regarding their environmental and biological impacts. Among these, zinc oxide nanoparticles (ZnO NPs) exhibit remarkable physicochemical and antimicrobial properties. Their high surface reactivity enables strong antibacterial activity against a wide range of food-borne pathogens. However, conventional chemical and physical synthesis methods are costly and environmentally hazardous. Consequently, green biosynthesis using microorganisms, especially probiotic lactic acid bacteria, has gained significant attention as an eco-friendly alternative. The present study focuses on the biosynthesis of ZnO nanoparticles, their characterization, and evaluation of antibacterial potential for food preservation applications.