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Green Synthesis and Characterization of Zinc Oxide Nanoparticles Using *Calendula Officinalis* †

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Abstract: Nanotechnology has seen extraordinary mechanical headways in the course of the most recent couple of decades. Zinc Oxide (ZnO) is a metal oxide that has unparallel semiconducting and optical properties. Zinc Oxide nanostructures have demonstrated incredible guarantee in the nanotechnology industry and have indicated headways in different biomedical applications that incorporate biosensing, biomedical imaging, and delivery of drugs. They are used industrially in rubber, paint, coating, and cosmetics industries. They have become the most well-known metal oxide nanoparticles in biotechnology due to their low toxicity, phenomenal biocompatibility, and monetary worth. Green synthesis, also known as biological synthesis, is an elective technique used other than traditional physical methods and chemical strategies for nanoparticle creation. This study includes the production of zinc oxide (ZnO) nanoparticles (ZnONPs) from the flower concentrate of *Calendula officinalis* (marigold). The produced Zinc oxide nanoparticles are characterized by X-ray diffraction (XRD), UV-Visible spectroscopy, Transmission electron microscopy (TEM), Fourier transform infrared spectroscopy (FT-IR), Scanning electron microscopy (SEM), and Energy-dispersive X-ray spectrometers. Phytochemical investigation of the marigold flower extract is also done.

Keywords: zinc oxide nanoparticles; green synthesis; *Calendula officinalis;* FT-IR; XRD.

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Conflicts of Interest

The authors declare no conflict of interest.