

International Conference on Nurturing Sustainability through Innovations in Science and Technology for Global Welfare



Contribution ID: 67

Type: Poster

Innovative Approaches in Nanotechnology: Endophytes as Bio-factories for Antioxidant and Antimicrobial Nanoparticle

The current study investigates the possibility of using endophytes, which are symbiotic microorganisms residing within plant tissues, as innovative biofactories for synthesizing nanoparticles (NPs). This study took advantage of the unique metabolic pathways of fungal endophytes to mycosynthesize NPs, which were subsequently characterized using Scanning Electron Microscopy (SEM), X-ray Diffraction (XRD), and Fourier Transform Infrared Spectroscopy (FTIR). These techniques confirmed the nanoparticles' size, morphology, and functional groups, highlighting their potential bioactivity. To further demonstrate such activity, DPPH and FRAP assays were conducted, where the NPs exhibited robust antioxidant activity. Additionally, the NPs demonstrated a significant enhancement in glucose uptake in in-vitro conditions, indicating potential applications in diabetes management. Broad-spectrum antimicrobial efficacy was also observed against various pathogenic fungi and bacteria. This research highlights the dual benefits of utilizing endophytes for nanoparticle synthesis: promoting environmental sustainability and advancing global health. The findings pave the way for innovative, eco-friendly solutions to pressing health issues, emphasizing the role of endophytes in fostering a sustainable future.

Keywords: Endophytes, Nanoparticle Synthesis, Antioxidant Activity, Antimicrobial Efficacy, Diabetes Management

Primary author: PRIYADARSHINI, Pragyan

Co-author: Dr SARAJINI, Suma (CHRIST(Deemed to be university))

Presenter: PRIYADARSHINI, Pragyan

Track Classification: Innovation and Technology for Sustainability