

Past and Present Research Systems of Green Chemistry

September 14-16, 2015 Orlando, USA

Biogenic preparation of ZnO nanoparticles reduced from *Ocimum tenuiflorum* and their antioxidant activity

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The evolution of green chemistry for the synthesis of nanoparticles using plants, enzymes, microorganisms is gaining a considerable interest among the researchers as an ecofriendly alternative to chemical and physical methods. The biogenic Zinc Oxide nanoparticles were synthesized using the *Ocimum tenuiflorum*. Structural, morphological, particle size and optical properties of the synthesized nanoparticles have been characterized by using UV-Vis spectrophotometer, Fourier Transform Infrared (FTIR) spectroscopy, Field Emission Scanning Electron Microscope (FE-SEM), Energy Dispersive X-ray Spectroscopy (EDS or EDX), Zeta Potential, X-ray diffraction (XRD). The UV-Vis spectrum showed an absorption peak at 380 nm that reflects Surface Plasmon Resonance (SPR). The optical measurements were attributed to the band gap 3.19 eV at pH 12. The Zeta potential value of -36.4 eV revealed the surface charge of green synthesized ZnO nanoparticles. The antioxidant activity was carried out by Diphenylpicrylhydrazyl (DPPH) and Reducing power assay. Green synthesized ZnO nanoparticles showed maximum inhibition (65.23%) and absorbance (0.6 a.u). This approach offers environmentally beneficial alternatives by eliminating hazardous chemicals and promotes pollution prevention by the production of nanoparticles in their natural environs.

Biography

B Deva Prasad Raju has teaching and research experience. He has published more than 50 articles in reputed journals. He has received research grants from organizations such as DST, DAE-BRNS etc. He got Fast Track Young Scientist Award from DST, New Delhi and also got Scientist Award from National Environmental Science Academy. His research areas are Photonics and Nanotechnology.

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