

Green Synthesis and Characterization of Zinc and Ferrous Nanoparticles for Their Potent Therapeutic Approach

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Abstract : Green nanotechnology is the most researched field in the current scenario. Herein we study the synthesis of Zinc and Ferrous nanoparticles using Moringa oleifera leaf extracts. Our protocol using established protocols heat treatment of plant extracts along with the solution of copper sulphate in the ratio of 1:1. The leaf extracts of Moringa oleifera were prepared in deionized water. Copper sulfate solution (1mM) was added to this, and the change in color of the solution was observed indicating the formation of Cu nanoparticles. The as biosynthesized Cu nanoparticles were characterized with the help of Scanning Electron Microscopy (SEM), and Fourier Transforms Infrared Spectroscopy (FTIR). It was observed that the leaf extracts of Moringa oleifera can reduce copper ions into copper nanoparticles within 8 to 10 min of reaction time. The method thus can be used for rapid and eco-friendly biosynthesis of stable copper nanoparticles. Further, we checked their antimicrobial and antioxidant potential, and it was observed that maximum antioxidant activity was observed for the particles prepared using the heating method. The maximum antibacterial activity was observed in Streptomyces griseus particles and in Trichoderma Reesei for the maximum antifungal activity. At present, we are engaged in studying the anti-inflammatory activities of these as prepared nanoparticles.

Keywords : green synthesis, antibacterial, antioxidant, antifungal, anti-inflammatory

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