



Synthesis and characterization of copper nanoparticles using *Tridaxprocumbens* and its application in degradation of bismarck brown

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Abstract:In the present work, copper nanoparticles (Cu NPs) have been synthesized by simple and green technique by using *Tridaxprocumbens* leaf extract. The formation of Cu NPs is monitored by recording the UV-Vis absorption spectra which showed surface Plasmon resonance at 320 nm. The green synthesized Cu NPs were further characterized by FT-IR, SEM and XRD. FT-IR identified the presence of active and phenolic groups. The crystalline morphology and size of the nanoparticles were determined by SEM and X-ray diffraction studies. The average particle size of Cu nanoparticles was found to be in the range of 71 nm. These biologically synthesized Cu NPs were tested for antimicrobial activity against five pathogens. The Cu Nps were also used for the remediation of a Bismarck brown dye. Approximately, 89% degradation of Bismarck brown dye was observed within 72 hours using Cu NPs. The mechanism involved in the degradation of dye and its phytotoxicity study has been presented. The overall outcome of this study suggests that the green synthesis of Cu NPs hold promise as a potent antimicrobial and antioxidant agent. The particles obtained were also found to degrade Bismarck brown dye.

Keywords: Cu NPs, Bismarck Brown, Phytotoxicity, Antioxidant activity, UV-Vis.

V. Devi Rajeswari *et al*/International Journal of ChemTech Research, 2016,9(9),pp 498-507.
