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Facile Green synthesis of Silver nanoparticles using carboxymethylNeem gum,Evaluation of their Catalytic and Antimicrobial activities

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Abstract: In this work we report simple, ecofriendly, stable silver nanoparticles (AgNPs) were synthesized using carboxymethylneem gum (CMNG) as both reducing and stabilizing agent. The successful formation of AgNPs was confirmed by UV-Visible spectroscopy (UV-Vis), X-ray powder diffraction (XRD), Fourier transform infrared spectroscopy (FTIR) and transmission electronic microscopy (TEM). The XRD studies indicates that the AgNPs were purely crystalline. TEM results showed that the average particle size of the synthesized AgNPs was 12±2 nm. The AgNPs demonstrated the excellent catalytic activity in reduction of 4-Nitrophenol (4-NP) to 4-Aminophenol (4-AP) in the presence of $NaBH_4$.The kinetics of the reaction was found to be of pseudo-first-order with respect to the 4-NP and the rate constant was found0.36 min^{-1}. The synthesized AgNPs showed good antibacterial activity.
Keywords: Green synthesis, Neem gum, Silver nanoparticles, Catalytic activity, antibacterial activity.

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