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## **Synthesis of Ag-Neem plant extract nanocomposites by microwave irradiation and evaluation of their antibacterial activities**

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Antibacterial activity of Ag-aqueous neem leaf/seed extract nanocomposites synthesized using microwave irradiation was studied against the inhibition of *Erwinia carotovora* present in rotten vegetables. Ag nanoparticles are formed due to the electrostatic interaction between the Ag<sup>+</sup> and the functional groups of the biomass. The exact mechanism of the plant mediated synthesis of metal nanoparticles is yet to be fully understood. However, the reduction process was confirmed by the presence of Surface Plasmon Resonance band ~410 nm in the UV-vis spectrum. Neem seed extract, Ag-neem seed/leaf extract nanocomposites and AgNO<sub>3</sub> showed a clear inhibition against *Erwinia carotovora* whereas neem leaf extract did not show any inhibition. Comparison of areas of the inhibition zones indicates Ag-neem seed extract nanocomposite showed stronger inhibition than the rest. Identity of the phytochemicals present and their concentration differences in each extract may be possible reasons for this. Stronger inhibition of *Erwinia carotovora* by Ag-neem leaf/seed extract composites than corresponding neem extracts may be due to the enhancement of local concentrations of phytochemicals on Ag nanoparticle due to their adsorption on the surface.

**Key words:** Silver-neem nanocomposite, antibacterial, phytochemical

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