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**Enhanced catalytic and antibacterial activities of phytosynthesized palladium nanoparticles using *Santalum album* leaf extract.**

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**Abstract**

*Santalum album* leaf extract mediated phytosynthesis of palladium nanoparticles (PdNPs) was reported in this paper. The synthesized PdNPs was characterized by UV-vis, TEM, XRD and FTIR analysis. Spherical morphology was observed in TEM analysis. XRD pattern revealed the face centred cubic crystalline nature of PdNPs. The major functional groups of phytochemicals responsible for bioreducing activity were identified by FTIR spectroscopy. PdNPs showed significant catalytic activity on 4-nitrophenol reduction to 4-aminophenol with the estimated kinetic rate constant of  $0.18 \text{ min}^{-1}$ . Antibacterial activity results showed that *S. album* derived PdNPs have enhanced bactericidal action against Gram negative bacteria than Gram positive bacteria. This green synthesis approach using *S. album* leaf extract for PdNPs synthesis is an efficient and economical approach for large scale production and the synthesized PdNPs can be used as an effective catalyst and antibacterial agent.

**Keywords:** *Santalum album*; palladium nanoparticles; phytosynthesis; catalytic; antibacterial.

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