

ISSHID: Oral Presentations Abstract-8 In vitro anti-tubercular and anti-HIV activity of silver nano particles synthesized using *Piper nigrum*

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Background: In 2017 alone, around 10.4 million people fell ill with TB and 1.7 million died due to this disease. Among them, 53 million lives were saved in the year 2000 to 2017 through TB diagnosis and treatment. Multidrug-resistant (MDR) TB and extremely drug-resistant (XDR) TB are more commonly reported in patients particularly affected with HIV co infection.

Methods: In this study, we used three different medicinal plants (*Piper nigrum*, *Mangifera indica*, *Moringa oleifera*) for the green synthesis of nanoparticle and tested their in vitro efficacy towards the TB and HIV. The silver nanoparticles synthesized by biological method were characterized by UV-Vis spectroscopy, FT-IR, XRD and SEM.

Results: The silver nanoparticles formation were confirmed by colour change and UV spectrum and FT-IR spectrum was used to confirm the presence of functional group in the biomolecules. Spherical shape of the silver nanoparticles were determined by SEM. The crystalline nature was analysed by XRD. In this study *Piper nigrum* silver nanoparticles (AgNPs) have shown superlative activity of 98.5% Relative light unit (RLU) reduction against *M. tuberculosis* H37Rv at 250 µg/ml concentration than the other two plants. IC₅₀ values of silver nanoparticles were 14.33 µg/ml after 48 hours cell lysis post infection towards TZM-bl cells.

Conclusion: The synthesis of silver nanoparticle using medicinal plants by green synthesis approach has several advantages like eco-friendliness, efficiency, cost effectiveness and biocompatibility. In this green synthesis of *Piper nigrum* silver nanoparticles have potential for biomedical application particularly as anti-TB and anti- HIV agents.

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