



**Nano-silver biosynthesis using culture supernatant of *Penicillium politans* NRC510: Optimization, characterization and its antimicrobial activity.**

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**Abstract :** The development of microbial assisted green synthesis of nanoparticles through reliable processes is critical due to its incredible applications in most of science fields. In this manuscript, silver nanoparticles (AgNPs) were successfully synthesized using an extracellular supernatant of *Penicillium politans* NRC510 under shake culture condition. Factors affecting the reduction of silver ions ( $Ag^+$ ) to silver metallic nanoparticles ( $Ag^0$ ) were investigated. The resulted AgNPs were characterized by UV-visible spectrophotometry, Scanning electron Microscopy (SEM), Energy Dispersive X-ray (EDX) analysis, Transmission Electron Microscopy (TEM), and Fourier transform infrared spectroscopy (FTIR). TEM studies detected the formation of spherical shaped AgNPs in the range of 3–30 nm. The formed nanoparticles showed antimicrobial activity against *Bacillus subtilis*, *Bacillus pumilus*, *Bacillus mycoides*, *Staphylococcus aureus* and *Escherichia coli* as well as *Candida albicans*.

**Keywords:** Silver nanoparticles, Synthesis, Characterization, *Penicillium politans*, Antimicrobial activity.

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