## ABSTRACT

Actinomycetes are potential microorganisms that produce various bioactive metabolites and have become potential sources of nanoparticle synthesis. The present work explores the extracellular biogenic synthesis of silver nanoparticles from *Actinomycetes* isolated from the Western Ghats, using the cell biomass and cell-free extract. Biosynthesized silver nanoparticles were confirmed by UV-Visible spectroscopy, Scanning electron microscopy (SEM) and Fourier Transform Infrared analysis (FT-IR). The synthesized AgNPs sizes found to be in the dimensions ranging between 50-200 nm. Characterization of the isolate RHC-1 was carried out by 16s rDNA sequencing. It was found that RHC-1 belonged to *Steptomycetes* sp. 13636G. The biogenic silver nanoparticles showed MIC in the range of 150-300 µg against Gram-positive and Gram-negative pathogenic bacteria. The study gives an approach to develop new antibiotic formulations based on metallic nanoparticles with effective antimicrobial properties.