

## ABSTRACT

The present study was performed for the synthesis of silver nanoparticles using *Ochna squarrosa* (L.) Teigh leaf extract. The plant sample was prepared first by cleaning the leaves and quenching them using liquid nitrogen to convert them to powder form. Then we make the solution of this extract in 100 ml. After heating in water bath for 60-80 °C we cool the filtrate then use it for nanoparticle synthesis. The extract phytochemical screenings revealed the presence of various bioactive compounds like saponins, flavonoids, tannins, alkaloids, terpenoids, phenolics which are responsible for silver ions reduction and stabilization. In second phase we prepare 5mM solution of  $AgNO_3$  and mix 9:1 of plant extract and silver nitrate solution. The silver nanoparticles (AgNPs) formation was then confirmed using UV-Vis spectroscopy that gives characteristic peak at 420 nm showing silver ions reduction, FTIR showing functional groups responsible for reducing nanoparticles, and SEM analysis showed that the size of the particles observed were in the nanoscale range of 80-200nm. Further the silver-based nanoparticles showed the antioxidant potential to the plant extract using 2,2-diphenyl-1-picrylhydrazyl (DPPH) assay. Using the disc diffusion method the antibacterial activity was performed against gram positive *Bacillus* and gram-negative *Staphylococcus* using standard Augmentin 250 mg as antibiotic. The antifungal activity was assessed against the *Aspergillus Niger* using same well diffusion method and standard used was Terbinafine 250 mg. The nanoparticles showed promising antibacterial and antifungal activities.