

INTRODUCTION

The synthesis of metallic nanoparticles is a key focus in material science due to their antimicrobial, optical, antioxidant, and catalytic properties, with applications in drug delivery and diagnostics. Silver, copper oxide, and zinc oxide nanoparticles are particularly significant in biomedical and industrial fields.

This study compares the green synthesis of these nanoparticles using *Lactuca serriola* leaf extract, evaluating synthesis efficiency, nanoparticle characteristics, and pharmacological activities.

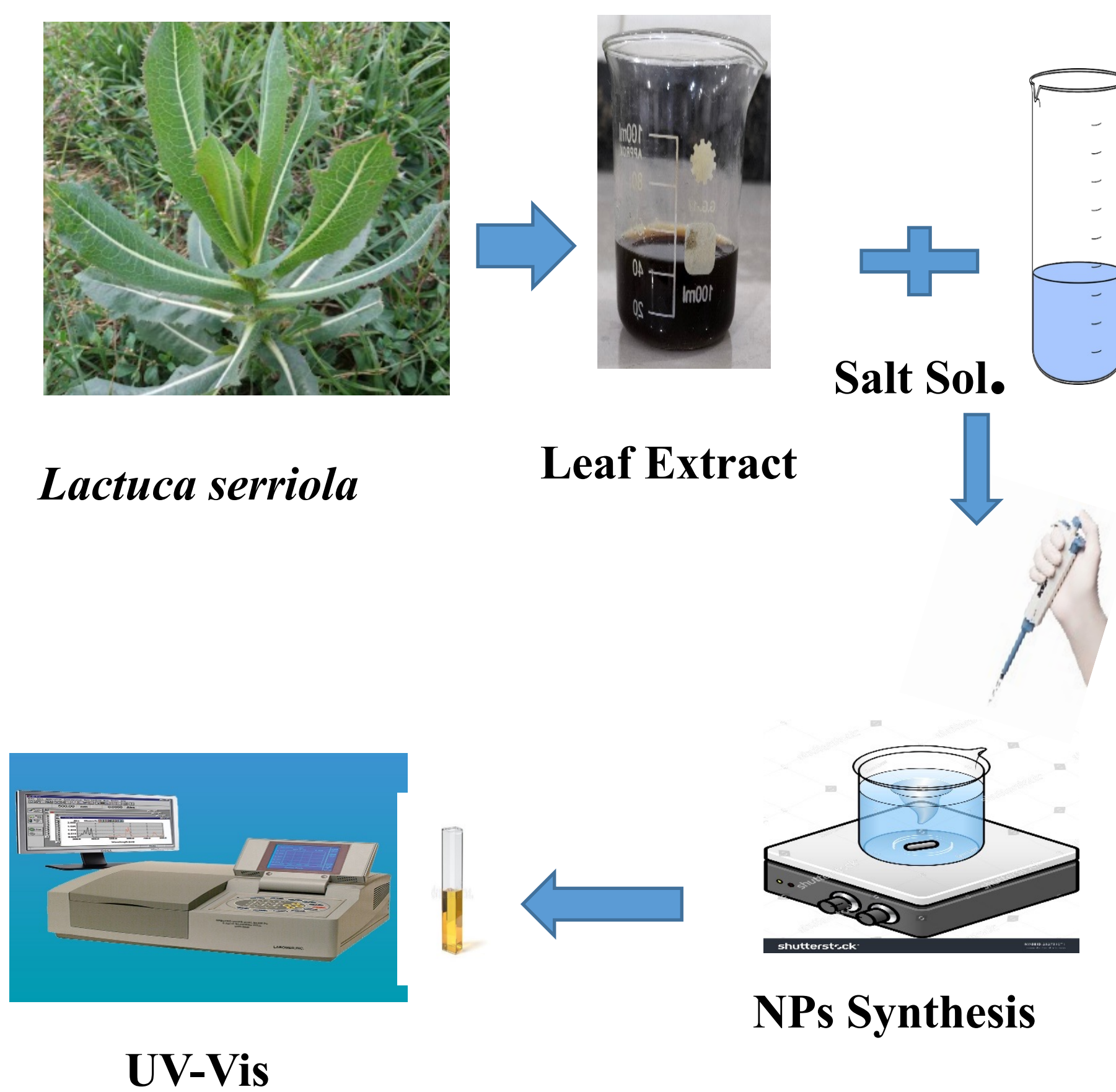
OBJECTIVES

Comparative analysis of Ag, CuO, ZnO nanoparticles synthesized using *Lactuca serriola* leaf extract.

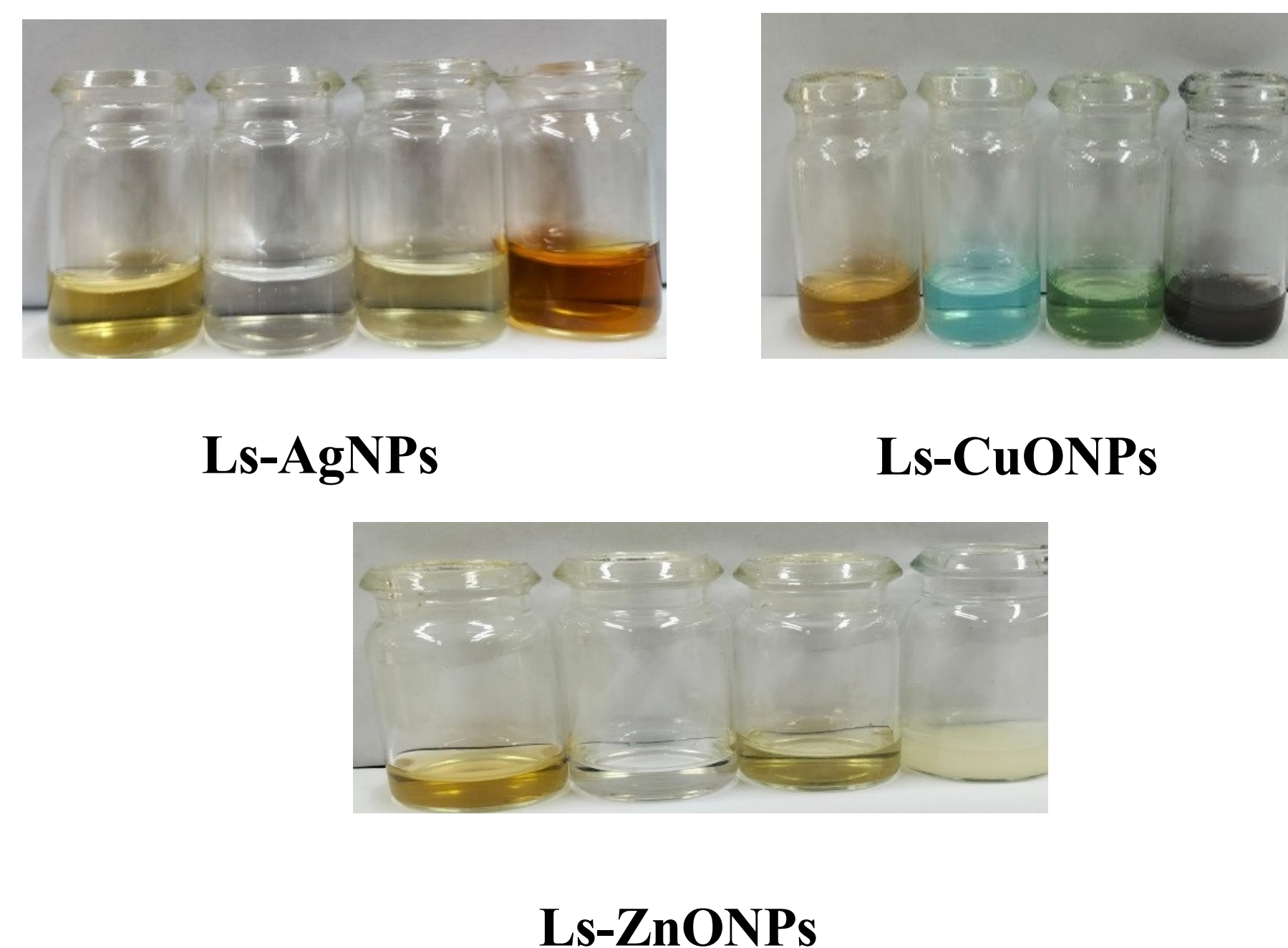
Evaluate the antibacterial and antioxidant activities of the metallic nanoparticles.

METHODOLOGY

Schematic diagram for Green- Synthesized Metallic Nanoparticles

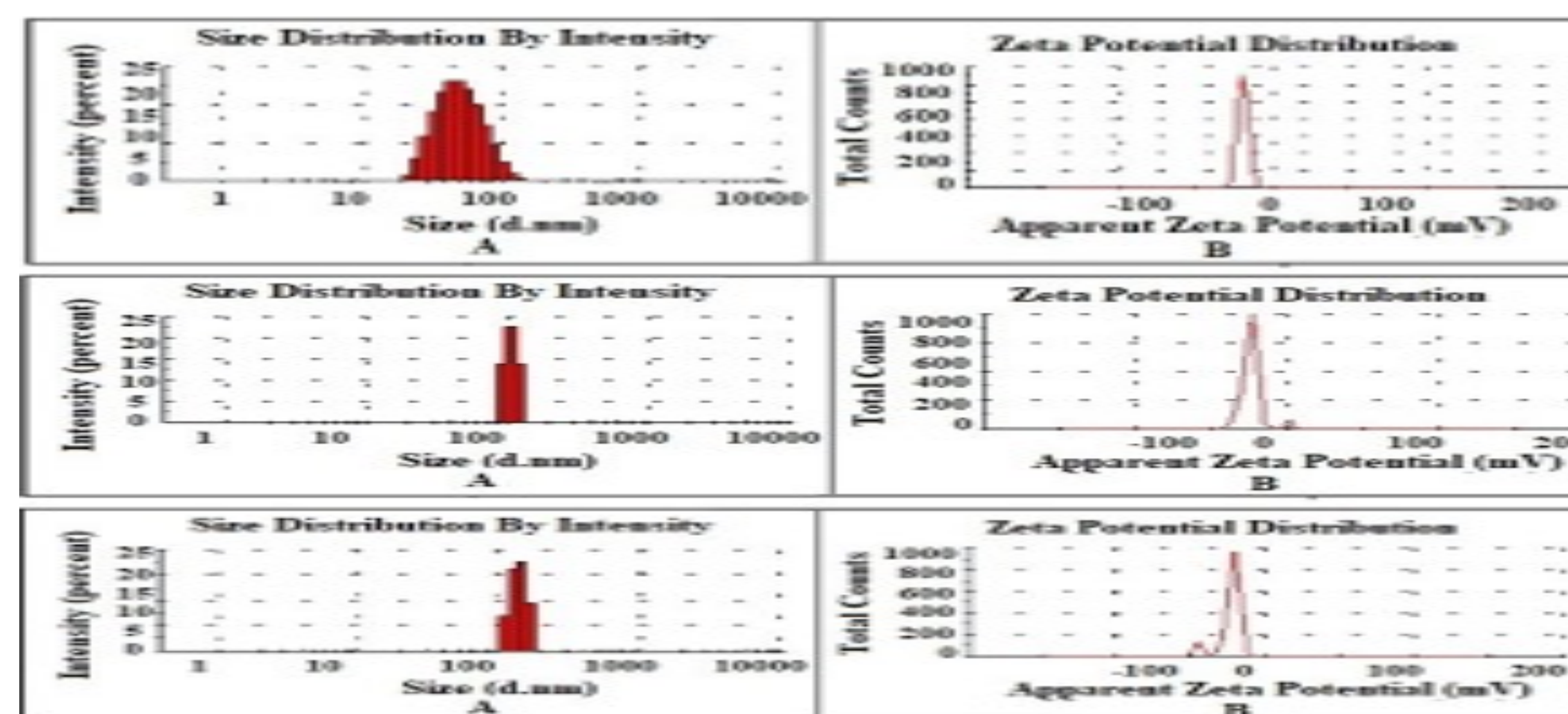


Change in colour of the reaction mixture after the reaction time

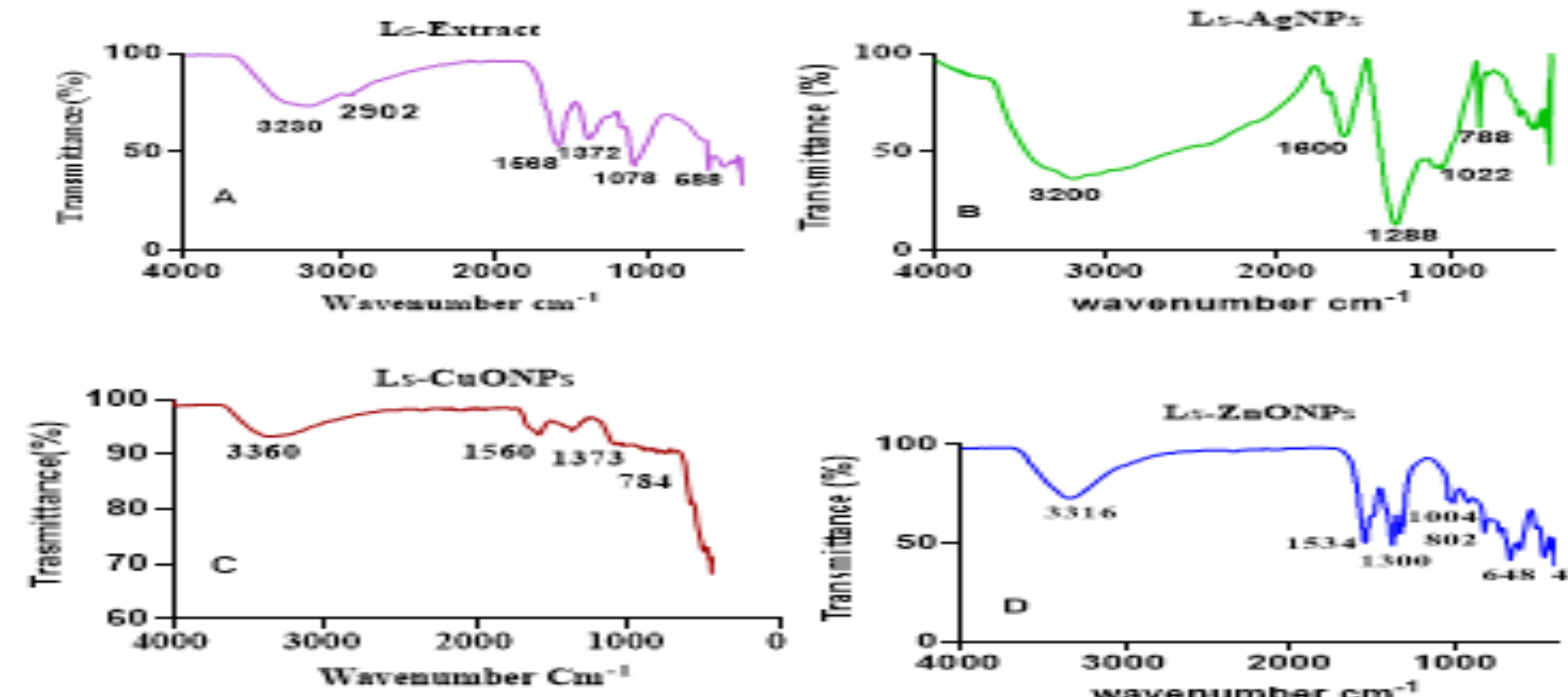


RESULTS

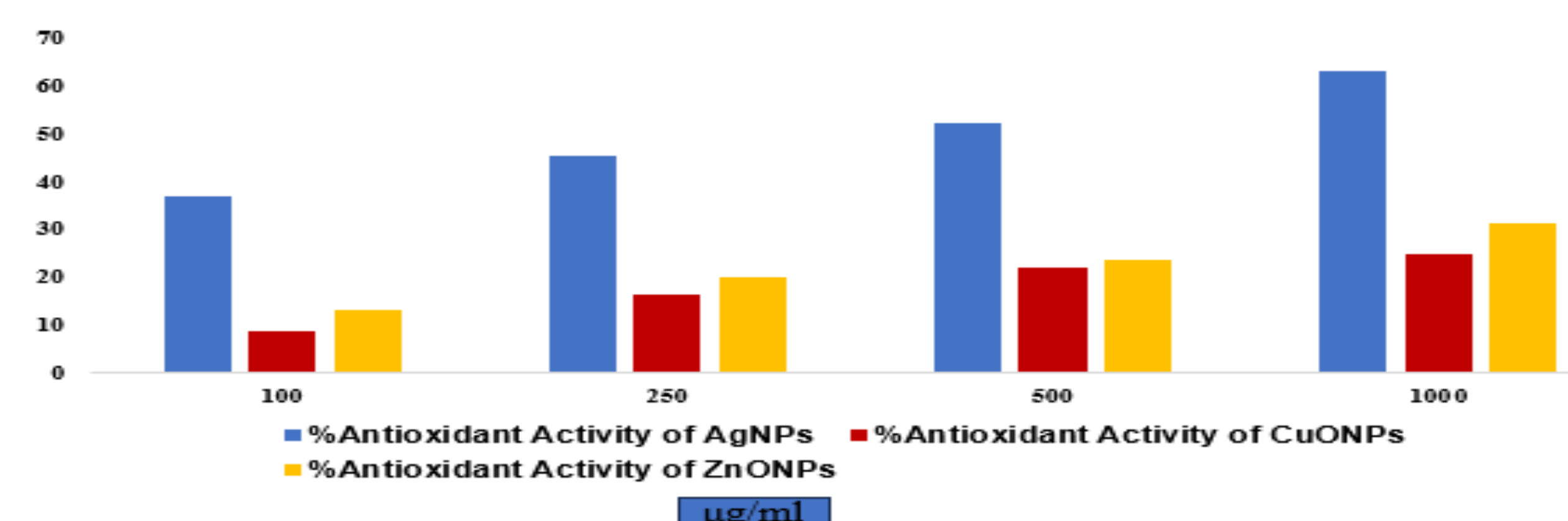
Particle size and zeta potential histograms of Green- Synthesized AgNPs, CuONPs, & ZnONPs



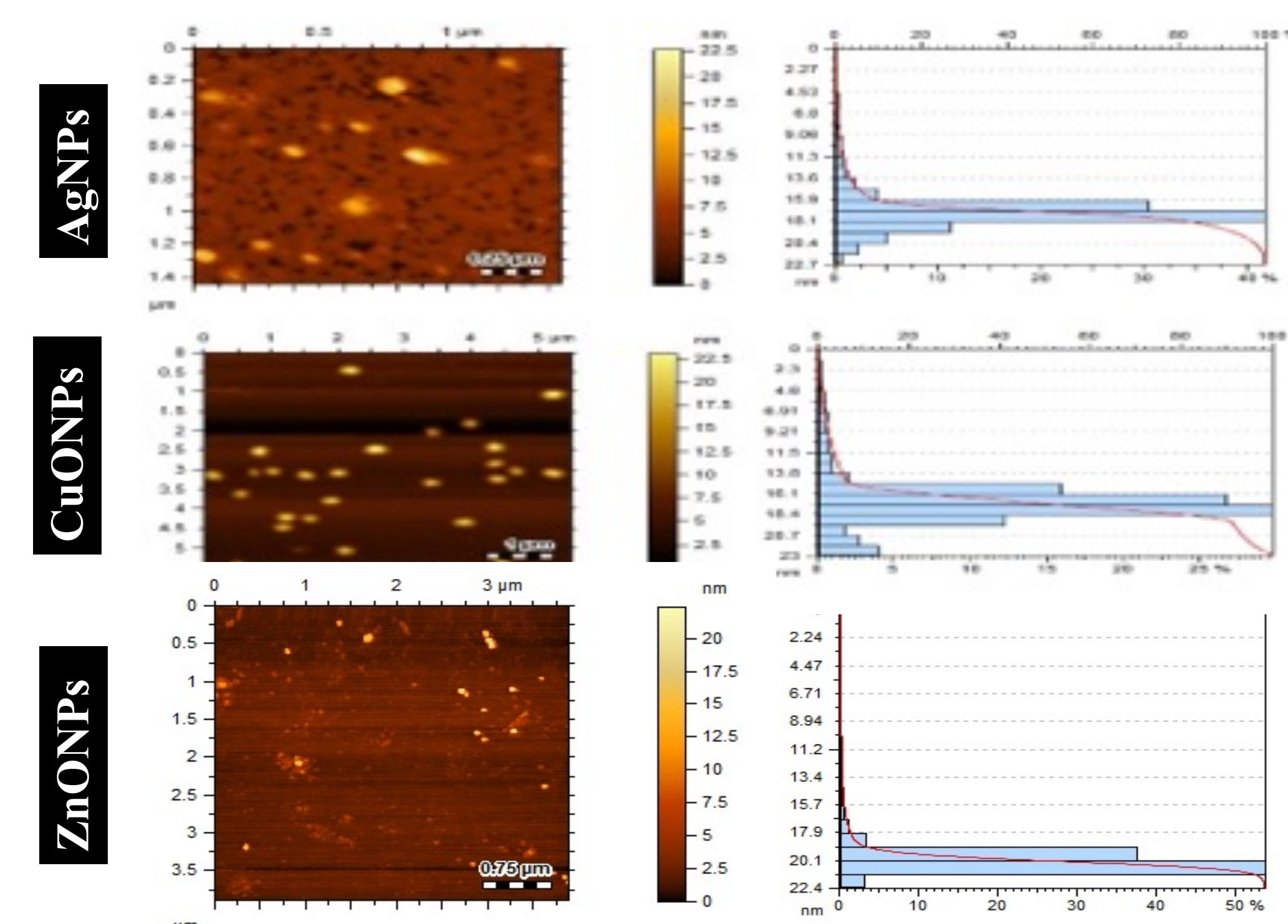
Fourier Transform Infrared (FTIR) Analysis of Green- Synthesized AgNPs, CuONPs, & ZnONPs



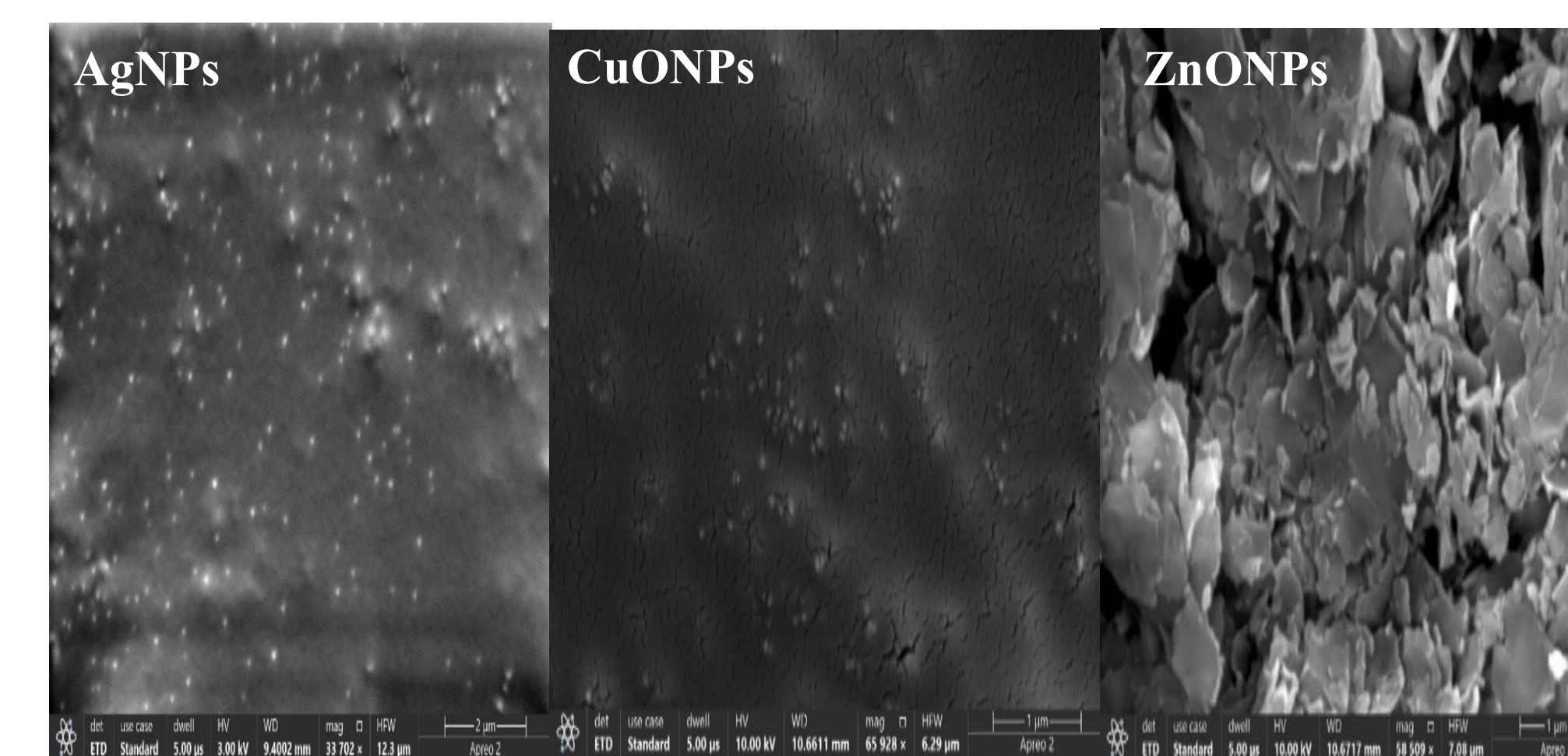
DPPH Scavenging Activity of Green-Synthesized AgNPs, CuONPs, & ZnONPs



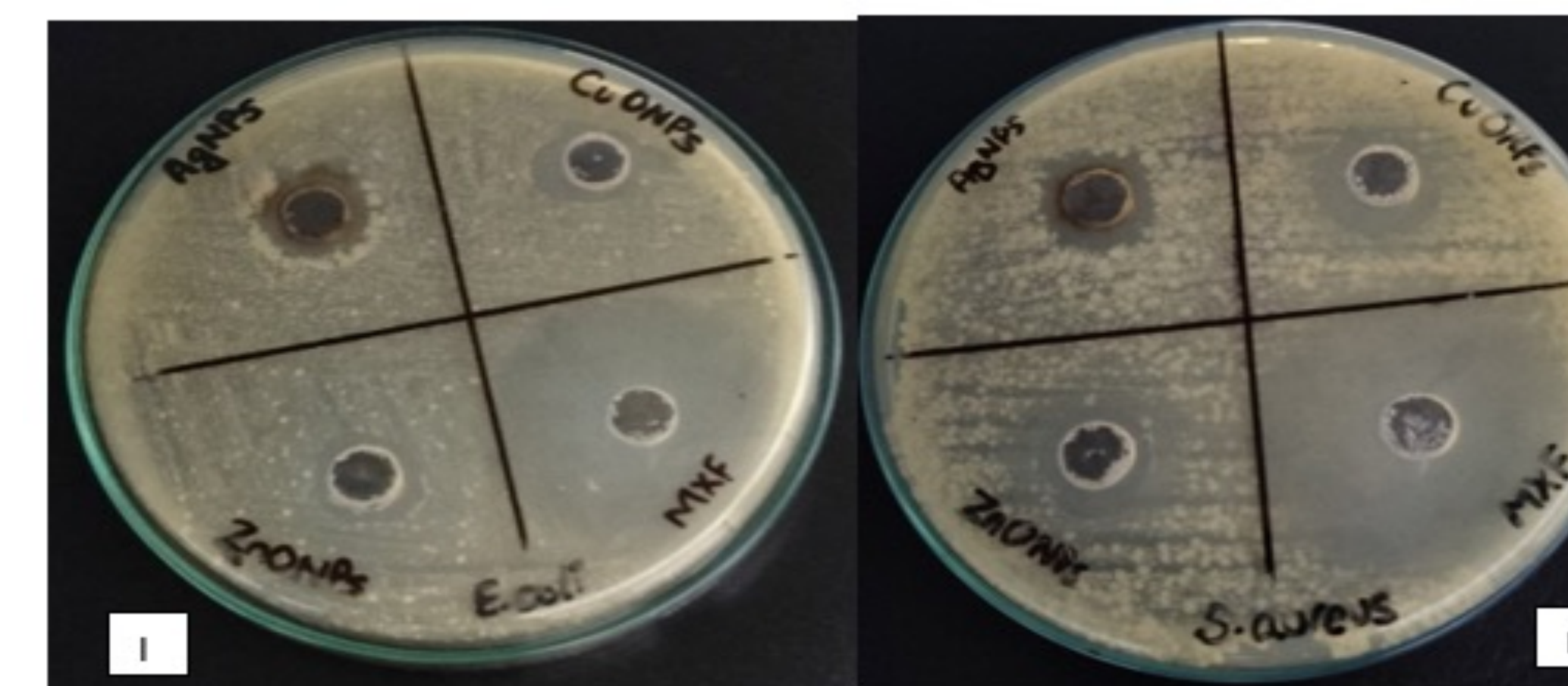
Atomic Force Microscopy (AFM) images & size distribution of Green- Synthesized NPs



Scanning Electron Microscopy (SEM) images of Green- Synthesised NPs



Antibacterial Analysis of AgNPs, CuONPs, ZnONPs & MXF against I. E.coli & II. S. aureus.



conclusion

Ag, CuO, and ZnO nanoparticles synthesized using *Lactuca serriola* leaf extract exhibited significant antibacterial and antioxidant properties, with Ag nanoparticles demonstrating enhanced efficacy.

Future research will focus on optimizing large-scale production and evaluating their performance in diverse applications for sustainable nanotechnology.

REFERENCES

- Haddi, R., El Kharraz, A. M., & Kerroumi, M. I. (2024). Green Synthesis of Zinc Oxide Nanoparticles Using Pistacia lentiscus L. Leaf Extract and Evaluating their Antioxidant and Antibacterial Properties. *Nano Biomedicine and Engineering*.
- Raj, S., Trivedi, R., & Soni, V. (2021). Biogenic synthesis of silver nanoparticles, characterisation and their applications—a review. *Surfaces*, 5(1), 67-90.

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