

GREEN SYNTHESIS OF METALLIC NANOPARTICLES BY USING *USNEA SUBFLORIDANA*, *PSEUDEVERNIA FURFURACEA*, *BRYORIA FUSCESCENS*, *CLADONIA RANGIFERINA*, *PELTIGERA PRAETEXTATA* EXTRACTS AND EVALUATION OF THEIR ANTIMICROBIAL ACTIVITIES

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Biosynthesis of nanoparticles by microorganisms is a green and eco-friendly technology. Various microorganisms are used for the synthesis of metallic nanoparticles. It could be a replacement for chemical and physical methods to produce nanoparticles. In this study, we synthesized and characterized Ag, ZnO, and Fe₂O₃ nanoparticles using extracts of lichen species such as *Bryoria fuscescens*, *Cladonia rangiferina*, *Pesudevernia furfuracea*, *Peltigera praetextata*, and *Usnea subfloridana*. The morphology and crystallinity of nanoparticles were investigated by UV-Visible spectroscopy, Zeta potential, Dynamic light scattering (DLS), Energy Dispersive X-ray (EDX), Fourier Transform Infrared spectroscopy (FT-IR) and Scanning Electron Microscope (SEM).

The second part of this study was articulated around the determination of their Minimum Inhibitory Concentration (MIC) against one Gram-positive bacteria: *Staphylococcus aureus*, and two Gram-negative bacteria: *Escherichia coli* (ATCC 25922) and *Aeromonas hydrophila* (ATCC 7966) using broth microdilution technique in 24 wells-microplate. *Peltigera praetextata* extracts Ag-NP based, was the most effective amongst the other lichen species showing inhibition of *A. hydrophila*, *E. coli* and *S. aureus* at 6.25 µg/ml 1.6 µg/ml and 3.12µg/ml, respectively.