Biosynthesis of Silver Nanoparticles using Root Extract of the Saussurea lappa (DECNE.) Clarke

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Abstract—Saussurea lappa (Decne.) Clarke commonly known as Kuth or Costus is an important endemic herb of Kashmir valley belonging to family Asteraceae. It is enlisted in the most endangered list of CITES (Appendix – I).

The aqueous root extract resulted change in colour from light yellowish to brownish black after mixing with the AgNO₃ solution which visually indicates the formation of silver nanoparticles. This was further confirmed with the UV-Vis spectroscopy showing sharp bands of root derived silver nanoparticles at around 418 nm. The mean particle size of silver nanoparticles derived from root extract was found 171.3 nm respectively.

The TEM image revealed that the silver nanoparticles were almost spherical in shape. The diameter of root extract derived nanoparticles were found to be 16.126 nm. The X-ray diffraction profile of the extract confirmed the face centre cubic (FCC) silver nanoparticles.

Keywords: Saussurea lappa; Root; silver nanoparticles.