International Journal of Basic and Applied Biology
p-ISSN: 2394-5820, e-ISSN: 2349-5839, Volume 3, Issue 3; July-September, 2016, pp. 210-210

http://www.krishisanskriti.org/Publication.html

Green Synthesis of Silver Nanoparticles using Plant Leaf Extract of *Adiantum peruvianum*

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Abstract—*Silver nanoparticles are today one of the most commonly used nanomaterials both in fundamental medical sciences and clinical practices. Advancement in the biological process of plant mediated synthesis of nanoparticle is evolving into a key area of nanotechnology offering an easy extracellular synthesis. The current study deals with the synthesis and characterization of silver nanoparticles using aqueous extracts of Adiantum peruvianum. The synthesis of nanoparticles was confirmed by change in colour from pale green to reddish brown. Further, a peak was obtained at 466nm.Transmission Electron Microscopy (TEM) analysis confirmed the formation of crystalline spherical SNPs of an average size of 2–35 nm. Compositional analysis using Energy Dispersive X-ray Spectroscopic Analysis (EDAX) showed strong characteristic signal for silver. The X-ray Diffraction (XRD) study confirmed the particles as silver, with a face-centred cubic geometry. Fourier Transform Infrared Spectroscopy (FTIR) evaluated the functional groups that might be involved in nanoparticles formation. Synthesis from Adiantum peruvianum seem to the best of our knowledge the use of Adiantum peruvianum for the synthesis of silver nanopaerticles is respected for the first time. The antibacterial activity, toxicity & antioxidant activity of these silver nanoparticles are under investigation.*

Keyword*: Nanotechnology, Silver nanoparticles, Leaf extract.*