026 LEAF EXTRACT MEDIATED GREEN SYNTHESIS OF SILVER NANOPARTICLES FROM WIDELY AVAILABLE WEDELIA TRILOBATA: SYNTHESIS, PARTIAL CHARACTERIZATION AND ANTIMICROBIAL PROPERTY ANALYSIS

Merell Pabilona Billacura, Hobaib Sarip Mimbesa. *Mindanao State University-Marawi Campus, Marawi, Philippines*

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Background Nanotechnology is an emerging and fast-growing technology due to the new and different characteristics of nanoparticles as compared with those of macroscopic phase, that allow attractive applications in various fields such as antimicrobials, medicine, biotechnology, optics, microelectronics, catalysis, information storage and energy conversion (Abdel-Aziz *et al*. 2013). Silver nanoparticles are safe and effective bactericidal metal because it is non-toxic to animal cells and highly toxic to bacteria (Kim, 2007). Several techniques for synthesis of silver nanoparticles have been developed such as using biological method which is simple, nontoxic and eco-friendly. It includes the use of plants and microorganisms to synthesize nanoparticles. In this study, the ability of the weed,Wedelia trilobatato synthesize silver nanoparticles is explored.

Objectives The main objective of this study is to synthesize silver nanoparticles usingWedelia trilobataand test its antimicrobial activity.

Methods Research designThe study was done in four major phases. First, the plant extract was prepared by decoction of pre-weighed leaves of the plant sample. Silver nanoparticles were then synthesized by reacting silver nitrate with the plant extract. The produced silver nanoparticles were characterized using scanning electron microscope and UV-Vis spectrophotometer. Finally, the silver nanoparticles were evaluated for antimicrobial activity.

Result Characterization of silver nanoparticlesThe colloidal sample of ratios 20:50 and 30:50 were analyzed using UV-Vis spectrophotometer. The curve for the 20:50 ratio gave a maximum wavelength at 420 nm. It was also observed that the absorbance increases in the 48 hours reaction. Thus, there is an increase in the concentration of silver nanoparticles. The curve for the 30:50 ratios gave a maximum wavelength at 412 nm. Analysis of the sample in scanning electron microscope confirmed the presence of silver particles in the colloidal mixture. Elemental analysis showed the presence of silver particles in the sample but in small amount. This may be because of partial or incomplete reduction of silver ions.

Antimicrobial activity

The water extract ofWedelia trilobataalone does not inhibit *E. coli* growth and the silver nitrate solution showed slight bacterial growth inhibition but addition of the plant extract to silver nitrate increases the zone of inhibition. This can be attributed in the reduction of silver ion to silver nanoparticles. The water extract ofWedelia trilobata alone does not inhibit *S. aureus* growth and silver nitrate solution showed slight *S. aureus* growth inhibition but addition of the plant extract to silver nitrate increases the zone of inhibition. The antifungal activity of the samples are all negative against Candida albicansandAspergillus niger. The plant extract and the silver nitrate alone did not exhibit zone of inhibition.

Conclusion The leaf extract of Wedelia trilobata,in the volume, 1, 5, 10, 20 and 30 mL can reduce silver ions to silver particles that have λ_{max} that are characteristic of silver nanoparticles. The inactiveness of silver nanoparticles against microorganism must be due to its bigger size.