ABSTRACT

The rapidly increasing use of metal-based nanoparticles in recent years has raised serious concerns regarding their eco-toxicological aspect. Henceforth, the development of safer, eco-friendly nanoparticles has emerged as a challenging task for the scientific community. The current study aims to develop silver nanoparticles via green synthesis using *Tribulus terrestris* extract and also assess their toxicity. Both chemically synthesized (C-AgNPs) and biologically synthesized (G-AgNPs) have surface Plasmon resonance at 403 and 400 nm in UV-Vis spectra. In G-AgNPs' FTIR spectra, -OH bonds stretched, and other bonds contracted. Albino mice were used as model animals; six groups of mice, each having 6 individuals; one positive and one negative control, and also four experimental, were tested for the toxicity against AgNPs and C-AgNPs while administering 0.3 ml dose orally/kg/day. At the completion of 28 days' trial, liver, kidney, and intestine tissue, and blood samples were taken. Radical scavenging activity, H_20_2, and ferric-reducing power assay were higher in G-AgNPs than in C-AgNPs. Catalase, SOD, and GST levels were reduced in C-AgNPs-treated groups compared to controls but increased with G-AgNP dose. This supported our hypothesis that G-AgNPs are less hazardous than C-AgNPs. In addition, liver, kidney, and intestine histology showed that green synthesized silver nanoparticles are safer.

Keywords: Silver nanoparticles, SOD, CAT, GST, toxicity, green synthesis, H_20_2, ferric-reducing power assay