## Abstract

Use of nanoparticles has been prevalent in the recent decades whereas the toxicity of metallic nanoparticles remains an issue of debate. Hence, there is need to develop safer and environment friendly nanoparticles while keeping their efficacy intact. The current study has been designed to develop silver nanoparticles by green synthesis using *Psidium guajava* L. pulp extract and evaluate its toxic profile. UV-Vis spectra show surface plasmon resonance for chemically synthesized silver nanoparticles (C-AgNPs) and green synthesized silver nanoparticles (G-AgNPs) at 393 nm and 405 nm respectively. Scanning electron microscopy (SEM) image show that average size of G-AgNPs is 30-35 nm. In FTIR spectra –OH bond stretching was seen in G-AgNPs and some other bonds were contracted and diminished. Male albino mice were divided into six groups (2 control and 4 experimental), according to their groups a 0.2 ml dose was given orally to test their toxicity. At the end of experiment blood samples were collected and the mice were dissected to obtain liver, kidney, and intestinal tissue. The G-AgNPs showed high level of RSA (25.85%), scavenged $H_2O_2$ (34.34%), and increase in FRP value upto (0.28) than that of C-AgNPs (7.80%, 20.16%, and 0.19 respectively). Catalase, SOD, and GST level decreased in C-AgNPs treated groups as compared to control whereas their values increased in response to increasing dose of G-AgNPs. This fact strengthened our hypothesis that G-AgNPs are less toxic than C-AgNPs. Additionally, the histopathology of liver, kidney, and intestinal tissues indicated that green synthesized silver nanoparticles are relatively safer.



**Keywords:** Silver nanoparticles, acute toxicity, oxidative stress, green synthesis, DPPH, FRP, GST, catalase, SOD