

Functional properties of *Averrhoa bilimbi* L. aerial parts and silver nanoparticles synthesized using its fruit extract

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Averrhoa bilimbi has been demonstrating various health benefits such as anti-inflammatory, anti-diabetic, and antibacterial properties. However, this food crop remains under-utilized. In this study, ethanolic extracts of leaves, fruits, and flowers were evaluated for antioxidant and anti-diabetic properties. Further, a rapid and simple approach was applied for the synthesis of silver nanoparticles using *A. bilimbi* fruit extract. Formulated silver nanoparticles were evaluated for their antimicrobial, α -amylase inhibition and antioxidant properties. Antioxidant capacity of the ethanolic extracts of flesh, leaf and flower of *A. bilimbi* have shown higher antioxidant and α -amylase inhibition percentages in fruit extract than the extracts of leaves and flowers. Antioxidant activities of silver nanoparticles show in DPPH assay inhibition percentages within the range of 6%-22% at the concentrations of 4-20 mg/L. Morphological characteristics of the synthesized silver nanoparticles were observed using scanned electron microscopy. Results revealed that *A. bilimbi* possesses antioxidant and anti-diabetic properties. Synthesized silver nanoparticles also possessing antimicrobial properties and this may be due to the new nanomaterials with photochemicals of *A. bilimbi* adsorbed to them.

Keywords: *Averrhoa bilimbi*, antioxidant, anti-diabetic properties, silver nanoparticles, DPPH radicals

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