

# Synthesis of Silver Nanoparticles From Plant Extract (Guava Leaves) Using Biological Method <sup>†</sup>

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<sup>†</sup> Presented at Virtual symposium to observe World Antimicrobial Awareness week “Applications of biotechnology and microbiology with special emphasis on Antimicrobial resistance”, 18-24 November 2020, Chennai, India

**Received: 10.11.2020; Revised: 15.11.2020; Accepted: 17.11.2020; Published: 10.01.2021**

**Abstract:** Among various inorganic nanoparticles, silver nanoparticles have received substantial attention in the field of antimicrobial research. For safe and biocompatible use of silver nanoparticles in antimicrobial research, different biogenic routes are developed to synthesize silver nanoparticles that do not use toxic chemicals. Among those, to synthesize silver nanoparticles, the use of plant part extract becomes an emerging field because plant part acts as a reducing as well as capping agent. For large-scale production of antibacterial silver nanoparticles using plant part, the synthesis route should be very simple, rapid, cost-effective and environment friendly based on easy availability and non-toxic nature of the plant, stability, and antibacterial potential of biosynthesized nanoparticles. In the present study, we report a very simple, rapid, cost-effective, and environmentally friendly route for green synthesis of silver nanoparticles using guava (*Psidium guajava*) leaf extract as a reducing as well as capping agent. This plant has been opted for in the present study for its known medicinal properties, and it is easily available in all seasons and everywhere. The biosynthesized silver nanoparticles are characterized by UV–Vis and TEM analysis. The average particle size is 40 nm in the range of 10–90 nm. The antibacterial activity of these nanoparticles against *Pseudomonas aeruginosa* MTCC 741 has been measured by disc diffusion method, agar cup assay, and serial dilution turbidity measurement assay. The results show that green synthesized silver nanoparticles, using guava (*Psidium guajava*) leaf extract, can inhibit the growth of bacteria.

**Keywords:** nanoparticles; biocompatible; capping agent; *Psidium guajava*; antibacterial activity; *Pseudomonas aeruginosa*.

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## Funding

This research received no external funding.

## Acknowledgments

This research has no acknowledgment.

## Conflicts of Interest

The authors declare no conflict of interest.