

Synthesis of silver nanoparticles by *clinacanthus nutans* extract supported with identification of flavonoids by UPLC-QTOF/MS and its antimicrobial activity

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ABSTRACT

The present study reported a simple method in synthesizing silver nanoparticles (AgNPs) by using *Clinacanthus nutans* extract. The UV–visible spectra showed the characteristic absorption peak at 480 nm, and the intensity was increased with the increase in plant extract ratio and incubation period. Analysis of particle size through FESEM, XRD and TEM revealed the average of synthesized AgNPs is 73.4 nm. The EDX analysis confirmed the formation of metallic nature of silver. The FTIR spectra indicated the role of carbonyl groups in the synthetic process and further confirmed by identification of flavonoids and their glycosides by UPLC-QTOF/MS. Antimicrobial activity of biosynthesized AgNPs shows effective inhibition against common bacterial strains including *Bacillus subtilis*, *Enterococcus faecalis*, *Staphylococcus aureus*, *Escherichia coli*, *Pseudomonas aeruginosa* and *Proteus vulgaris*.

KEYWORDS

Silver nanoparticles; *Clinacanthus nutans*; Antimicrobial activity; UPLC-QTOF/MS; Flavonoids

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