

ABSTRACT

The present investigation was accomplished to determine the phytochemistry, antioxidant and antimicrobial activities of silver nanoparticles of bark extracts of *Citrus limon*, *Citrus limetta*, *Citrus sinensis* and *Citrus grandis* as well as of silver nanoparticles of aqueous extracts of the targeted bark samples. The crude extracts by maceration technique, obtained in various non-polar and polar solvents, viz., n-hexane, chloroform, ethanol and distilled water. Phytochemical analysis indicated the presence of flavonoids, betacyanins, saponins, tannins, steroids and glycosides in the extracts. Aqueous bark extracts of all targeted citrus fruit plants showed highest count of phytochemical compounds. Antioxidant potential was measured by DPPH Free Radical Scavenging Assay, Total Phenolic Content Assay, Total Flavonoid Content Assay and Metal Chelating activity. Values of % DPPH ranged from 85% to 33%. Chloroform extract of *C. limetta* showed lowest value for %DPPH and n-Hexane extract showed highest value for %DPPH. % DPPH of AgNPs varied from 80% to 62%. The value of TPC and TFC varied from 180.32 to 180.3 mg GAE/g and 81 to 11.1 mg QE/g DW, respectively. The values of TPC and TFC for AgNPs varied from 121.57 to 82.32 mg GAE/g DW and 72.52 to 12.86 mg QE/g DW, respectively. Values of %inhibition in metal chelating varied from -57% to -399%. Ethanolic extract of *C. limetta* showed lowest %inhibition and distilled water *C. grandis* showed highest %inhibition. Antimicrobial tests were performed by Agar Well Diffusion Method. Maximum zone of inhibition against *Escherichia coli*, 23.14 ± 0.60 mm was shown by aqueous extract of *C. sinensis*. Maximum zone of inhibition (27 ± 0.01 mm) against *Pasteurella multocida* was shown by aqueous extract of *C. grandis*. Maximum zone of inhibition was shown by aqueous extract of *C. grandis* (18 ± 0.14) against *C. albicans* and *C. sinensis* (20 ± 0) against *P. notatum*. For gram-negative bacteria, maximum zone of inhibition was shown in AgNPs of *C. grandis* against *Pasteurella multocida*. AgNPs of *C. sinensis* showed maximum zone of inhibition against *C. albicans* and *P. notatum*.