

Fruit Mediated Synthesis of Gold and Silver Nanoparticles Using *Lycium chinense* and Their Antimicrobial Activity

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The gold (*LC*-AuNPs) and silver (*LC*-AgNPs) nanoparticles were rapidly synthesized by fruit extract of *Lycium chinense* within 1.15 and 25 min respectively in an eco-friendly way. The synthesized nanoparticles confirmed by relevant surface plasmon resonance peaks for gold and silver nanoparticles at 536 and 480 nm, respectively. FE-TEM results revealed that *LC*-AuNPs were 20-50 nm and *LC*-AgNPs were 50-100 nm. The maximum distribution of gold, silver elements and the crystallographic nature of synthesized were confirmed using EDX, elemental mapping and XRD. *LC*-AgNPs showed inhibitory activity against pathogenic microorganisms such as *E. coli* and *S. aureus*, whereas *LC*-AuNPs did not show inhibitory activity. The *LC*-AgNPs nanoparticles exhibited significant cytotoxicity to human breast cancer MCF7 cell line and less cytotoxicity to non-diseased RAW264.7 (murine macrophage) cells whereas *LC*-AuNPs showed minimal toxicity to both cell lines. In-depth research on this rapid, facile and greenery nanoparticles may play a potential role in biomedical applications.

Key words: *L. chinense*, Gold nanoparticles, Silver nanoparticles, Antibacterial activity, Cytotoxicity, Breast cancer

[This research was supported by a Grant from Korea Institute of Planning & Evaluation for Technology in Food, Agriculture, Forestry & Fisheries (KIPET No.: 317007-3).]