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The Antibacterial Activity of *Angelica glauca* Edgew (Apiaceae) in The Form of Silver Nanoparticles

Abstract

Angelica glauca (Apiaceae) is traditionally an over-the-counter herbal preparation; although nowadays, nanotechnology formulates silver nanoparticles (AgNPs) from *Angelica glauca*. Utilization of green chemistry through nanoparticle formulations contributed to pharmaceutical properties enhancements in plants' crude extracts. The present study aims to evaluate the antibacterial activity of the synthesized silver nanoparticles (AgNPs) from *Angelica glauca* crude methanolic extract and perform phytochemicals assay screening *Angelica glauca* AgNPs by scan electron microscope (SEM), and finally *in vitro* antibacterial assay of the methanolic extract and silver nanoparticles. After soxhlet extraction, the recovered crude methanolic extract of dried *Angelica glauca* roots was subjected to nanoparticles derivatization, additionally, the AgNPs were analyzed with SEM. Five metabolites were detected, the *in vitro* antibacterial assay was performed using disc diffusion method against four selected microbial species. The extract yield was 13.3g, and the phytochemical analysis revealed the presence of alkaloids, flavonoids, tannins, steroids, and coumarins. The detected particle size was 70.90 nm + 13.60 (mean + SD). The crude extract's antibacterial potential was enhanced by the nanoparticulation. The results of this study display the AgNPs semisynthetic product as an approach to improve the crude extracts' bioactivities. In conclusion, *Angelica glauca* contains several bioactive phytochemicals which can be used in curing health-related problems.