Coriander leaves and seeds have been highly appreciated since ancient times, not only due to their pleasant flavours but also due to their inhibitory activity on food degradation and their beneficial properties for health, both ascribed to their strong antioxidant activity. Recently, it has been shown that the coriander leaf extracts can mediated the synthesis of metallic nanoparticles through oxidation/reduction reactions. In the present investigation, extracts of coriander leaves and seeds have been used as reaction media in the wet chemical synthesis of ultrafine silver nanoparticles and nanoparticle clusters with urchin-like and tree-like shapes coated by biomolecules (mainly, proteins and polyphenols). In such greener route of nanostructure preparation, the active bio-compounds of coriander play simultaneously the roles of reducing and stabilizing agents. The morphological and microstructural studies of the resulting biosynthesized silver nanostructures revealed that the nanostructures prepared with a small concentration of the precursor Ag salt ([AgNO$_3$] = 5mM) exhibit a ultrafine size and a narrow size distribution, whereas particles synthesised with high concentrations of the precursor Ag salt ([AgNO$_3$] = 0.5M) are polydisperse with the occurrence of supremolecular structures. Fourier-transform infrared (FTIR) and Raman spectroscopy studies indicated that the bioreduction of the Ag$^+$ ions take place through their interactions with free amine, carboxylate ion and hydroxyl groups. As a consequence of such interactions, residues of proteins and polyphenols capped the biosynthesized Ag nanoparticles providing them a hybrid core/sell structure. In addition, these biosynthesised Ag nanomaterials exhibited size-dependent plasmon extinction bands and a enhanced bactericide activities against both Gram-positive and Gram-negative bacteria, displaying minimal inhibitory Ag concentrations lower than typical values reported in the literature for Ag nanoparticles, probably due to the synergy of the bactericide activities of the Ag nanoparticle cores and their capping ligands.

**Keywords:** silver, nanoparticles, coriander

**References:**

1. Safety assessment of coriander (Coriandrum sativum L.) essential oil as a food ingredient, George A. Burdock, Ioana G. Carabin Food and Chemical Toxicology 47 (2009) 22-34.

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