

Antioxidant, Cytotoxic and Antimicrobial Activities of Crude and Green Synthesized Silver nanoparticles Extract of *Crataegus sinaica* Boiss.leaves

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Abstract

Bio-green synthesis of silver nano particles of the crude extract of *Crataegus sinaica* leaves was carried out; characterizations using UV/Vis spectrophotometry, Scanning Electron Microscope, Transmission Electron Microscope and FT-IR spectrometry, the gained nanoparticles were predominantly spherical with an average size of 30 nm. The nano particles' extract (CSAgNPs) showed more total phenol, flavonoid, hydrolysable tannin and proanthocyanidin contents (203.75 ± 0.50 mg GAE g⁻¹, 77.80 ± 0.70 mg QE g⁻¹, 117.20 ± 1.60 mg TAE g⁻¹, 0.510 ± 0.011 mg CE g⁻¹ & 190.28 ± 0.70 mg GAE g⁻¹, 54.48 ± 0.9 mg QE g⁻¹, 97.15 ± 1.3 mg TAE g⁻¹ & 0.187 ± 0.002 mg CE g⁻¹), consequently more significant antioxidant potentials (57.15 ± 0.59 , 42.45 ± 0.38 & 91.15 ± 0.37 , $79.88\pm 0.56\%$) at 500 and 1000 μ g ml⁻¹ compared to crude extract. Screening of cytotoxic activity towards HEP-G2, HCT-116 and MCV-7 using Cisplatin as standard revealed that nanoparticles' extract exhibited more significant potency expressed as reduction of IC₅₀ (10.20, 29.50 & 1.72) compared to crude extract (23.80, 41.80 & 5.58 μ g). Antimicrobial studies revealed that the nanoparticulated extract exhibited more significant antibacterial activity against *Staphylococcus aureus*, *Bacillus subtilis* & *Escherichia coli* but devoid of activity against *Pseudomonas aeruginosa* compared to Gentamycin, also nanoparticulated extract exhibited more antifungal activity against *Candida albicans* but devoid of activity against *Aspergillus niger* compared to Ketoconazole.

Int. J. Pharm. Sci. Rev. Res., 2017, July