Vinca minor AND *Chelidonium majus* AS REDUCING ANGENTS FOR Ag-MnO_2 NANOPARTICLE SYNTHESIS

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Introduction. Medicinal plants play an important role in the so called "green chemistry" wave, where metal nanoparticles with high therapeutic properties are obtained.

Material and methods. Three types of Ag-MnO_2 nanoparticles (NPs) were obtained using *Vinca minor* and *Chelidonium majus* plant extracts. The NPs were characterized through scanning and transmission electron microscopy (S/TEM), Fourier-Transformed Infrared Spectroscopy (FTIR), and X-ray diffraction (XRD). Their medicinal potential was assessed against *Escherichia coli* and *Staphylococcus aureus* bacteria, *Candida albicans* fungi, normal keratinocytes (HaCaT), and skin melanoma (A375) cells, through biochemical and electron microscopy techniques.

Results. The NPs had polygonal shapes and were uniformly distributed, with crystalline structures and different sizes (from 9.3 nm to 32.4 nm). The NPs synthesized in the presence of *V. minor* extract inhibited the development of both microbes and cancer cells taken into account. The antimicrobial effect tested through agar well diffusion method showed an inhibitory capacity of the *V. minor* synthesized NPs of almost 16 mm. The viability of A375 cells was reduced to 38.8% while a moderate cytotoxic effect was observed on HaCaT (46.4%) cells at concentrations above 500 µg/mL. At the same concentrations, NPs synthesized with *C. majus* had a rather proliferative effect, whereas the NPs synthesized with extract mix (1:1, v/v) negatively affected both cell lines.

Conclusions. The *C. majus* and *V. minor* extracts can form small and uniformly distributed Ag-MnO_2 NPs with high potential for selective treatments and can be used for various biomedical applications.

Keywords: *cytotoxicity, green chemistry, electron microscopy, microbiology, plant extracts*

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References.

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