

Detection of Cytotoxicity of Green Synthesized Silver, Gold, and Silver/Gold Bimetallic on Baby Hamster Kidney-21 Cells Using MTT Assay

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Abstract : In cancer therapy, nanoparticles (NPs) shall be applied possibly by inoculation in the veins of humans. This action will connect them with white (WBCs) and red blood cells (RBCs) in the bloodstream before they reach their main targeted cancer cells. However, possible effects of silver, gold, and silver/gold bimetallic NPs (Ag, Au, and Ag/Au BNPs) on baby hamster kidney-21 (BHK-21) cells were studied by MTT assay. Here, Ag, Au, and their Ag/Au BNPs (bimetallic nanoparticles) were synthesized by using *Hippeastrum hybridum* (HH) extract. These NPs were characterized by UV-visible spectroscopy, FT-IR, XRD, and EDX, and SEM analysis. XRD analysis conferring the crystal structure with an average size of 13.3, 10.72, and 8.34nm of Ag, Au, and Ag/Au BNPs, respectively. SEM showed that Ag, Au, and Ag/Au BNPs had irregular morphologies, with nano measures calculated sizes of 40, 30, and 20 nm respectively. EDX spectrometers confirmed the presence of elemental Ag signal of the AgNPs with 22.75%, Au signal of the AuNPs with 48.08%, Ag signal with 12%, and Au signal with 38.26% of the Ag/Au BNPs. The BHK-21cells were incubated in the existence of doxorubicin, plant extract, Ag, Au, and Ag/Au BNPs. The cytotoxic effects could be observed in a dose-dependent mode; doxorubicin and Ag/Au BNPs were more toxic than plant extract, Ag, and Au NPs. It is demonstrated that NPs interact with BHK-21cells and significantly reduce cell viability in a concentration-dependent manner. However, to reduce the potential threats of NPs further studies are recommended.

Keywords : *hippeastrum hybridum*, nanoparticle, BHK-21cells

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