

2nd International Summit on **Integrative Biology**

August 04-05, 2014 Hilton-Chicago/Northbrook, Chicago, USA

Silver nanoparticles from *Adenium obesum* extract induced DNA damage, apoptosis and autophagy via generation of reactive oxygen species

Fahad M A Al-Hemaid
King Saud University, Saudi Arabia

Silver nanoparticles (AgNPs) are an important class of nanomaterial for a wide range of industrial and biomedical applications. The biological properties of a novel AgNP, synthesized from an aqueous leaf extract of *Adenium obesum* (AOAgNP), were investigated on MCF-7 breast cancer cells. The formation of AOAgNPs was characterized by ultraviolet-visible absorption spectroscopy and atomic force microscopy. Cytotoxicity, generation of reactive oxygen species, DNA damage, induction of apoptosis and autophagy was determined to assess the toxicity of AOAgNP on MCF-7 cells. A dose-dependent decrease in the cell viability was observed. The IC₅₀ value was calculated at 335 µg/ml. Both qualitative and quantitative evaluation confirmed about 2.5 fold increase in the generation of ROS at highest concentration of 300 µg/ml. A significant ($p < 0.05$) increase in the DNA damage evaluated by comet assay was evident. Flow cytometry revealed significant increase in the apoptotic cells (25%) in AOAgNP treated group as compared to the control. Acridine orange staining of acidic vesicles in exposed cells confirmed the induction of autophagy. These results suggest that AOAgNP increased the level of ROS that leads to the DNA damage, Apoptosis and autophagy in MCF-7 cells.

Biography

Fahad M A Al-Hemaid has been teaching at the Department of Botany and Microbiology, King Saud University in Saudi Arabia for the past 25 years. He is the head of the Department between the year 2010-2014 in which oversaw the study curriculum as well as the restructuring of the Department. He was awarded his Masters and Doctorate from the University of Aberdeen, Scotland. He is a member of several scientific societies and committees including: Saudi Biological Society, Working Group of Plants, NCWCD, Arabian Plant Specialist Group (APSG), IUCN, SSG/IUCN, Saudi Society of Agricultural Sciences (SSAS), the Ecological and Taxonomical Units, Scholarship Committee for Demonstrators and post-graduate students, Biodiversity Council and others.

fhemaid@KSU.EDU.SA