J Nanomed Nanotechnol 2016, 7:5 (Suppl)
http://dx.doi.org/10.4172/2157-7439.C1.044

11th International Conference and Expo on
Nanoscience and Molecular Nanotechnology
October 20-22, 2016 Rome, Italy

In vitro cytotoxicology effects of zinc oxide flower-like nanostructures in normal and cancer cells

I M M Paino[1], **F J Gonçalves**[2], **F L de Souza**[2] and **V Zucolotto**[1]
[1]University of São Paulo, São Carlos, Brazil
[2]Federal University of ABC, Brazil

Introduction: Metal oxide nanoparticles, including zinc oxide, are versatile platforms for biomedical applications and therapeutic intervention. Zinc oxide nanoparticles (ZnO Nps) are frequently used in consumer products, such as textiles, cosmetics, antibacterial products and they have been described as important for their excellent biomedical applications, such as cancer therapy. ZnO flower-like nanostructures have been reported as a new therapeutic alternative for cardiovascular diseases. However, there are very few studies conducted on safety, toxicology and exposure of ZnO nanostructures to normal and cancer cells. In this study, we investigate the *in vitro* cytotoxicology effects of ZnO flower-like nanostructures in human cervical carcinoma (HeLa) cells and normal murine fibroblast (L929) cells.

Methods: Apoptosis and necrosis processes were performed using Annexin V-FITC apoptosis BD® kit, production of reactive oxygen species (ROS), and the cellular uptake by side-scattered light (SSC) by flow cytometry (FACSCalibur, BD®, USA). Cells were incubated at 0.1, 1.0 and 10.0 gmL-1 of ZnO flower-like nanostructures synthetized at different times (30 min, 2 h and 4 h) for 24 h and exposure at 37oC, 5% CO2 atmosphere.

Results: All results were performed as the mean±standard deviation of 3 independent experiments. Data were submitted to one-way analysis of variance (ANOVA) and the post-hoc Tukey test considering $p<0.05$.

Discussion/Conclusion: The cytotoxic response ($p<0.05$) observed in normal and cancer cells showed that the ZnO nanostructures exhibit an enhanced toxicology effects in HeLa cancer cells. This ability may be of clinical interest due the effectiveness of ZnO flower-like nanostructures in cancer therapy.

iedammp@hotmail.com

Photocatalytic cement-based mortars with unconventional aggregates for the improvement of indoor air quality

Tittarelli Francesca, Giosuè Chiara, Mobili Alessandra and Ruello Maria Letizia
Università Politecnica delle Marche, Italy

Using of passive systems to improve Indoor Air Quality (IAQ) could be very useful in terms of energy savings and comfort of occupants. This study focused on an innovative and multifunctional mortar able to improve IAQ. The action of photocatalytic binder coupled with adsorbent materials used as aggregates was investigated. Results show better water vapour permeability and moisture buffering capacity, and lower mechanical properties of unconventional-aggregate based mortars with respect to the traditional ones. With respect to VOC, depollution capacity of the former was up to 65% higher than the mortar prepared with sand. The addition of UV irradiation positively influences depollution capacity even in presence of conventional aggregate.

f.tittarelli@univpm.it