12th International Conference and Exhibition on **Pharmacovigilance & Drug Safety**
&
22nd International Conference and Exhibition on **Pharmaceutical Formulations**
&
21st Euro-Global Summit on **Toxicology and Applied Pharmacology**

July 04-06, 2019 Valencia, Spain

Effect of vanadium trioxide (V_2O_3) on the expression of p^{21} and p^{53} genes of human lymphocytes treated *in vitro*

Víctor A Alcántara-Mejía, Nydia A Ocampo-Aguilera, Carmen I Rico-Valdés, Rodrigo A Mateos-Nava, Juan J Rodríguez-Mercado, Lucila Álvarez-Barrera and **Mario A Altamirano-Lozano**
Universidad Nacional Autónoma of México, México

Vanadium is a metal that is released to the environment naturally or by anthropogenic activities into the atmosphere by forming oxides (V_2O_5, V_2O_4 and V_2O_3). The living beings are exposed to their compounds by the food, the air and by dermal exposure and the body can accumulate it in different organs inducing toxic effects. *In vivo* and *in vitro* studies have shown that it interacts with different biomolecules modifying their structure or function; in the case of V_2O_3 it induces genotoxic and cytostatic effects due to this increase of numerical chromosomal aberrations, premature separation of the centromere, single breaks in the DNA chain, increase the average time of proliferation and decrease of the mitotic indexes and replication, likewise, it delays the cellular proliferation of human lymphocytes by modifying the expression of protein levels that regulate it, however, the mechanism by which it causes these effects is not known. For these reasons, the objective of this work was to evaluate the DNA and RNA integrity of human lymphocytes exposed for 24 hours at 2, 4, 8 or 16 µg/mL of V_2O_3, in addition by qualitatively analyzing the expression of the genes p^{53} and p^{21}. Results show that the different treatments with V_2O_3 do not modify the cell viability in comparison with the group without treatment, in the case of the expression of the genes, it was observed that p^{21} is expressed in all treatments and p^{53} only in the concentrations of 8 and 16 µg/mL, which could be linked to decrease the levels of the proteins that control the cell cycle by delaying its proliferation.

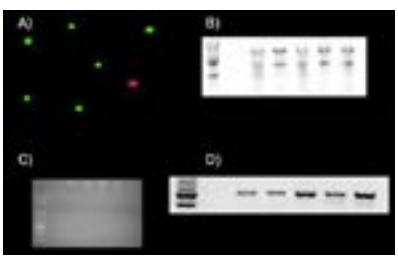

Figure 1: Results obtained from A) cell viability, b) integrity of RNA, C) integrity of DNA and d) expression of P^{53} and GADPH gen

Recent Publications

1. Mateos-Nava R A, Rodríguez-Mercado J J and Altamirano-Lozano M A (2017) Premature chromatid separation and altered proliferation of human leukocytes treated with vanadium (III) oxide. Drug Chem Toxicol. 40(4):457-462.
2. Álvarez-Barrera L, Rodríguez-Mercado J J, López-Chaparro M, Altamirano-Lozano M A (2017) Genotoxicity of Casiopeina III-Ea in mouse bone marrow cells. Drug Chem Toxicol. 40(3):333-338.
3. Altamirano-Lozano M A, Álvarez-Barrera L, Mateos-Nava R A, Fortoul T I and Y Rodríguez-Mercado J J (2014) Potential for genotoxic and reprotoxic effects of vanadium compounds due to occupational and environmental exposures: An article based on a presentation at the 8th International Symposium on Vanadium Chemistry, Biological Chemistry, and Toxicology, Washington DC, August 15–18, 2012. J Immunotoxicol. 11(1):19–27.

4. Rodríguez-Mercado J J, Mateos-Nava R A and Altamirano-Lozano M A (2011) DNA damage induction in human cells exposed to vanadium oxides *in vitro*. *Toxicol In Vitro*. 25(8):1996-2002.
5. García-Rodríguez Mdel C, Hernández-Cortés L M and Altamirano-Lozano M A (2016) *In vivo* effects of vanadium pentoxide and antioxidants (ascorbic acid and alpha-tocopherol) on apoptotic, cytotoxic, and genotoxic damage in peripheral blood of mice. Oxid Med Cell Longev. 2016:6797851.

Biography

Víctor A Alcántara-Mejía obtained the Degree of Biology at the UNAM in 2017. His work was presented at the 12th and 13th Congress of Research in 2016 and 2017, also at the 2017 National Congress of Genetics by Mexican Genetic Society. He was a Professor in the Propaedeutic course of chemistry for new students entering the Biology Degree in 2017 and 2018.

Notes: