Silvia Martina Ferrari et al., Immunome Res 2018, Volume 14
DOI: 10.4172/1745-7580-C1-014

9th Molecular Immunology & Immunogenetics Congress

March 08-09, 2018 | London, UK

CXCL9 and CXCL10 chemokines secretion by vanadium pentoxide in primary thyroid cells

Silvia Martina Ferrari, Poupak Fallahi, Ilaria Ruffilli and **Alessandro Antonelli**
University of Pisa, Italy

Statement of the Problem: Vanadium is a grey metal, with different states of oxidation (-1, 0, +2, +3, +4, and +5), and its most common form in commercial products is vanadium pentoxide (V_2O_5). All vanadium compounds have been considered toxic. The exposure to a 35 mg/m^3 dose of vanadium is considered life-threatening and it could provoke serious health issues, and even death, as it has been shown by The National Institute for Occupational Safety and Health. Recently it has been hypothesized a carcinogenic role of vanadium on the thyroid. However, no *in vivo* or *in vitro* studies have evaluated thyroid disruption in humans and/or animals after exposure to vanadium.

Methodology & Theoretical Orientation: Here, we evaluate the effect of V_2O_5 on proliferation, and chemokine secretion in normal thyrocytes.

Findings: The results of this study demonstrate that V_2O_5 can promote interferon-gamma dependent chemokines secretion by thyroid follicular cells, synergistically increasing the effect of Th1 important cytokines, as interferon-gamma and tumor necrosis factor-alpha, without altering their viability and proliferation. In this way, V_2O_5 could lead to the induction and perpetuation of an inflammatory reaction into the thyroid.

Conclusion & Significance: Further studies will be required to evaluate thyroid function, and nodules, in subjects occupationally exposed, or living in polluted areas.

Recent Publications

1. Occupational safety and health guidelines for vanadium pentoxide. Occupational Safety and Health Administration. (Retrieved 29 January 2009)
2. Malandrino P, Russo M, Ronchi A, Minoia C, Cataldo D et al. (2016) Increased thyroid cancer incidence in a basaltic volcanic area is associated with non-anthropogenic pollution and biocontamination. Endocrine. 53(2):471-479.
3. Antao Menezes A, Turpin E A, Bost P C, Ryman Rasmussen J P, Bonner J C (2008) STAT-1 signaling in human lung fibroblasts is induced by vanadium pentoxide through an IFN-beta autocrine loop. The Journal of Immunology. 180(6):4200-4207.
4. Ferrari S M, Fallahi P, Antonelli A, Benvenga S (2017) Environmental issues in thyroid diseases. Frontiers in Endocrinology. 8:50.
5. Barceloux D G (1999) Vanadium. Journal of toxicology. J Toxicol. Clinical Toxicology. 37(2):265-278.

Biography

Silvia Martina Ferrari is graduated in Biological Sciences *cum laude* in 2002 and specialized in Clinical Pathology in 2007 at the University of Pisa (Italy). Her principal areas of expertise are autoimmune thyroid disorders, chemokines and cytokines, type 1 diabetes, systemic autoimmune disorders, HCV-associated thyroid disorders and thyroid cancer. Her researches have been published in more than 154 articles in international journals (HI=38). She serves as an Editorial Board Member and is Referee and Reviewer of many scientific international journals.

sm.ferrari@int.med.unipi.it

Notes: