

PS31-PARALLEL SESSION 31: ENVIRONMENTAL FACTORS AND SEX HORMONES IN AUTOIMMUNITY

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XENOBIOTICS AND AUTOIMMUNITY

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Background/Objectives: Autoimmune disease affects about 10% of the world's population, and the reports of incidence of autoimmune disease are on the rise. At the same time the world continues to expand its use of industrial and household chemicals. These chemicals or their metabolites can bind covalently to high-molecular-weight carrier proteins in various tissues and induce both cellular and humoral immune responses against both **haptenic chemicals** and various tissue proteins. This study aimed to examine the percentage of blood samples from healthy donors in which chemical agents mounted immune challenges and produced antibodies against HSA-bound chemicals.

Design/Method: Based on the above mechanism of action we examined the levels of specific antibodies against 14 different chemicals bound to HSA by ELISA in serum from 400 blood donors.

Results: We found that 13-16% (IgG and/or IgM) of tested individuals showed significant antibody elevation against endocrine disruptors such as bisphenol-A and tetrabromobisphenol-A. The percentage of elevation against the other 12 chemicals ranged from 8% to 22% (IgG) and 13% to 18% (IgM).

Conclusions: While measuring blood and urine levels of chemicals can determine indications of exposure, the detection of antibodies against chemical-bound tissue proteins is an indication of chemical body burden and possibly lifetime exposure. This methodology should be extended to groups susceptible to autoimmune disease in order to guide them toward lifestyle modifications that may decrease the risks of autoimmune disorders. This method can enable scientists to learn the importance of chemicals in the etiology and prevention of autoimmune disorders.