

Arsenic status of cardiovascular tissues from cardiac patients

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Abstract

Non cancer effects also affecting the health of persons due to the arsenic exposure. Cardiovascular illness has been well documented, but little it is known on arsenic in the cardiovascular tissues.

The aim of this work was to study the status of arsenic in cardiovascular tissues from an arsenic exposure heart patients group of Antofagasta Chile, regarding a group of none arsenic exposure patients.

Total arsenic concentrations were measured in 215 cardiovascular pieces tissues of the arsenic exposure group and 25 pieces tissues of the control group. Each patient was asked to complete a self-administered questionnaire. The determinations of total As were performed by means of HG - AAS, HG - AFS and ICP - MS, while the speciation analysis was made applying HPLC - ICP - MS.

Auricle, saphenous veins, mammary arteries, and pooled fat samples from the arsenic exposure group gave concentrations of arsenic within the following ranges: 0.79 - 13.9; 0.28 - 13.6; 0.25 - 10.7; and 0.12 - 7.70 $\mu\text{g} / \text{g}$ dry weight, which were greatest, than of the control group. The clustering of the total arsenic concentrations with demographic - case variables influenced by medical geology factors and conditional case - variables they allowed to infer that the first they are more important as discriminating against of the disease cardiovascular risk, and the arsenic speciation reveals that the principal "arsenic target tissues" were the auricles and the mammary arteries. The knowledge of the total arsenic and the prevalence of As^{3+} in the auricle of the arsenic exposure group patients, could contribute to understand the arsenic impact on cardiovascular illnesses in countries where arsenic it is an important environmental stressor.

Biography

Isabel Pizarro Veas, PhD in Analytical Chemistry, she obtained her degree from the Universidad Complutense de Madrid, Spain. She works in the Department of Chemistry of the Faculty of Basic Sciences in the University of Antofagasta. Her research has focused on community themes, such as the effects of heavy metals and especially arsenic on human health. The work obtained three international recognitions: "TOP 100 Scientists 2014", granted by the International Biographical Centre of Cambridge in England; "Woman of the Year 2014" from the same institution, as well as the inclusion of her biography in "Who's Who in the World 2014, 2015 and 2016, published in New York, where her name appears with leading scientists from around the world.