

Metal Toxicity: A Least Explored Environmental Problem

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Among the various environmental pollutant metals contribute a serious health hazards. Environmental contamination and exposure to heavy metals such as mercury, cadmium and lead is a serious growing problem throughout the world. Human exposure to heavy metals has risen dramatically in the last 50 years as a result of an exponential increase in the use of heavy metals in industrial processes and products. Systems in which toxic metal elements can induce impairment and dysfunction include the blood and cardiovascular, eliminative pathways (colon, liver, kidneys, skin), endocrine (hormonal), energy production pathways, enzymatic, gastrointestinal, immune, nervous (central and peripheral), reproductive, and urinary. Heavy metals may alter, remove, or impair the production of specific molecules needed in the body. They may alter the structure of various entities such as the mitochondria or a cell nucleus. Heavy metals may create disturbances in the cell-to-cell communication occurring between inflammatory mediators, nerve cells, or hormones. Toxic heavy metals target sites such as membrane or structural proteins, enzymes, or DNA molecules. Once at the target site, they can displace an important mineral from its binding site and “pretend” to be this mineral. This is called “molecular mimicry”; however, they cannot perform the mineral’s function and so inhibit any activity at the binding site, affecting cellular function [1-3]. The effects of heavy metals on human health need to be evaluated in current scenario specially developing countries like India. The WHO- Health Report on “reducing risk, promoting healthy life” identified as environment and occupational exposure to toxic metals as one of the major risk factors for increasing health burden across the world. Recently *Indian Journal of Medical Research* has published a special issue on “Metal toxicity and health implications” (*Indian J Med Res* 128 (4): 331-556, October 2008 issue). It has been observed that metal toxicity is completely ignored by medical professionals while practicing. We really feel that more awareness is needed to update the recent information on metal toxicity and the knowledge to combat these challenges among the medical parishioners, medical faculty members and students of medical sciences. The purpose of this special issue on metal toxicity based on the seminar entitled “*Recent Update of Metal Toxicity and its Implications on Community Health*” will explore the recent updates on metal poisoning and various defense mechanisms to counteract it.

Reference:

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2. Bralley J A, Lord RS. . *Laboratory Evaluations in Molecular Medicine*. Norcross GA: The Institute for Advances in Molecular Medicine, 2001.
3. Crinnion WJ. Environmental medicine, part three: long-term effects of chronic low-dose mercury exposure. *Altern Med Rev* 2000; 5(3): 209-223.