



# INTERACTIONS BETWEEN NUTRITIONAL AND TOXIC METALS: A DIETARY APPROACH

COMMENT TO "TRACE MINERALS AND HEAVY METALS: IMPLICATIONS IN PROSTATE CANCER" BY S.I.A. SHAH ET AL.

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## *To the editors*

Toxic metals are ubiquitous pollutants that enter our bodies through smoking, food, drink, air, water, cosmetics, dyes, orthopaedic implants, piercings, tattoos, drugs, clothes, paints and daily objects which tend to bioaccumulation<sup>1,2</sup>, thereby representing an emerging health and environmental hazard<sup>3</sup>. In fact, when not balanced by adequate detoxification, the continuous exposure of the population to these toxins inevitably leads to accumulation along with the resulting increased inflammation risk and related chronic diseases<sup>4-7</sup>. Recently, several studies are focused to found the interaction between metals/minerals and diseases<sup>8</sup>. The authors have been well summarized current relations between trace minerals (i.e. selenium, calcium, iron, zinc, copper, magnesium) and prostate cancer. Anyway, the authors listed only studies that have highlighted the role of the individual trace elements, leaving out toxic metals, and the complex relationships that can occur between these two categories<sup>9</sup>. The role of the analysis of individual elements is, in our opinion, different from the complete interaction of all trace/toxic elements, because of the complex relations between the different metabolic pathways, and for biological cellular capacity to compensate a metabolic pathway if there is a shortage of another way<sup>10</sup>. We believe ultimately that the ideal model to search the relationship between a mineral and a given disease should be determined by the total study of trace elements on metabolic pathways, as well as list a set of studies on single substance (as well reported by the authors). The analysis of metabolic pathways, (metabolomics) could be achieved through a valuation of the micronutritional

intake (plant-based foods) and the environmental exposure, the only ways to introduce trace elements in molecular and osmotic balance<sup>9,10</sup>.

## **CONFLICT OF INTERESTS:**

The Authors declare that they have no conflict of interests.

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