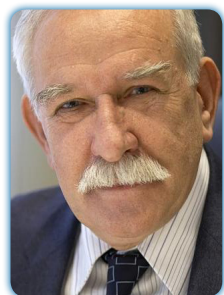


# 8<sup>th</sup> World Congress on TOXICOLOGY AND PHARMACOLOGY

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### Selenium and human health: Interactions with heavy metals

The function of Selenium (Se) as trace element for animals and humans has been known for several decades. Se is an essential microelement at low levels of intake and produces toxic symptoms when ingested at level only three to five times higher than those required for adequate intake. It is generally accepted that blood Se depends on dietary intake. According to some epidemiological data, low Se intake may be associated with higher cancer incidence and also implicated in cardiovascular diseases, diabetes and asthma. Beneficial role of Se is related to its role in the antioxidative system i.e. antioxidative enzymes (glutathione peroxidases; thioredoxine reductases) and several selenoproteins (i.e. selenoprotein P). In recent years, most attention was paid to Se in the context of cancer incidence reduction, which was demonstrated in animal studies and human clinical trials in relation to human cancer. Epidemiological studies, including retrospective, Prospective and also intervention ones, show that a low Se level, may increase the risk of certain cancers. However, it should be noted that there is also a relatively large number of studies, in which no effect of Se on cancer has been observed. From epidemiological point of view Se interaction with heavy metals raises a large interest. Although antagonistic influence of Selenium on bioaccumulation of mercury, Cadmium and arsenic in experimental animals is well known, interaction mechanism between those elements in humans has remained unexplained. However, in many cases the doses and character of exposure in experimental animals differed from dose observed in human exposure. To sum up, Selenium is important element for human health; however, relationship between Se and toxic elements should be taken into account. This kind of research may prove to have not only scientific as well as practical value.

#### Recent Publications

- Wasowicz W, Gromadzinska J, Rydzynski K, Tomczak J (2003) Selenium status of low-Selenium area residents: Polish experience. *Toxicology Letters*. 137: 95-101.
- Wasowicz W, Gromadzinska J, Rydzynski K (2001) Blood concentration of essential trace elements and heavy metals in workers exposed to lead and Cadmium. 14: 223-229.

#### Biography

Wojciech Wasowicz, PhD, is Full Professor at Nofer Institute of Occupational Medicine and Head of the Biological and Environmental Monitoring Department. He has a background in Biochemistry, Analytical Chemistry and Toxicology. He has wide experience with toxicology of metals and its interactions with microelements, oxidative stress markers, and antioxidant enzymes related to human health. The next field of interest is potential protective role of some antioxidants against chemicals. He shows great scientific activity confirmed by numerous publications and active participation in symposia, conferences and scientific meetings organized in Poland (Polish Society of Toxicology) and abroad (EUROTOX, IUTOX), and has given numerous lectures as keynote and plenary speaker in international congresses. His work has hitherto resulted in 170 scientific papers published mainly in journals of international recognition.

#### Notes:

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