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SELENIUM IN THE ENVIRONMENT: ESSENTIAL OR TOXIC TO HUMAN HEALTH?

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Abstract

Selenium (Se) is a mineral of fundamental importance for human health. Se status in general population is very important due to its remarkable benefits to the human body: antioxidant, hormonal regulator, anti-carcinogen. At the same time Se can be toxic leaving a narrow optimal range for optimal intake. Both excess and deficit are known to cause a wide range of clinical manifestations. Even though a large body of evidence provides vast information about Se, the exact molecular mechanisms of its effect in physiologic and pathologic conditions remain unknown. The individual Se requirements are still in debate, as there is a marked difference in the distribution of serum selenium levels of individuals in the general population. The general opinion is that in the last 20 years the requirements were higher than the international dietary reference values for selenium. There are several issues related to environmental Se and human health: the link between Se status in soil-plants-human body (plants extract Se from soil incidentally and the type of soil influences the Se content in food), necessity of Se supplementation in general population, therapeutic effects of Se in various diseases. The lack of suitable frameworks in general population represents an issue for the assessment of health/economic impact of Se deficiency. Further researches are needed in: agriculture, economics and health in order to determine the costs/benefits relationship and monitor the health outcomes of Se supplementation.

Key words: agriculture, environment, health, selenium, selenoenzymes

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