

Abstracts for a conference on trace elements in diet, nutrition, and health: essentiality and toxicity

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Category 1: Trace element intakes, dietary patterns, bioavailability, and tissue distributions

1.P01

The effect of enrichment with sunflower seed, sesame seed and alpha tocopherol acetate to linoleic acid quantity in cookies

Sumalika Piammongkol Patcharin Pakdeechanuan;
Prince of Songkla University (Pattani, Thailand)

ATH. Essential trace elements as Cu, Se, Zn, and Fe are involved in endogenous antioxidant systems, mainly as cofactors of antioxidant enzymes. Other elements, like K and Ca, might play a role in atherogenesis while implicated in physiological and metabolic processes which are known to be disturbed in ATH. The aim of the present study was to evaluate some blood antioxidant markers and blood elemental levels in 20 Azorean subjects (ten men and ten women, aged 40 to 65 years) with coronary artery disease previously submitted to percutaneous revascularization (PCI). The whole blood glutathione peroxidase (Se-GPx) and erythrocyte superoxide dismutase activities were measured, as well as serum vitamin E levels (by HPLC). The concentrations of K, Ca, Fe, Cu, Zn, and Se in plasma and blood cells were determined by PIXE. Results were analyzed by taking into account several cardiovascular risk factors, namely, gender, hypertension, dyslipidemia, and total plasma homocysteine (tHcy) concentration. Se-GPx activity and vitamin E levels were significantly lower (24 and 15%, respectively) in the PCI group than in controls. In blood cells, significant differences in Ca (19 ± 5 vs 24 ± 6 $\mu\text{g/mL}$) and Zn (14 ± 1 vs 12 ± 2 $\mu\text{g/mL}$) levels were observed in PCI women (but not in men) compared to the respective counterparts. Also in PCI women, both serum triglyceride and plasma tHcy concentrations were above reference values and higher than in men. Results suggest a decreased antioxidant status in PCI patients. In particular, women appear to be less protected than men, as reflected in some cardiovascular risk factors.

3.P02

Blood trace element levels in patients with stabilized atherosclerosis

Ana Maria Viegas Crespo¹, Patrícia Napoleão¹, Paula Lopes¹, Maria Cristina Santos¹, Maria Leonor Pavão², and Maria Teresa Pinheiro³

¹Faculdade de Ciências, Universidade Lisboa (Lisboa, Portugal); ²CIRN, Universidade dos Açores (Ponta Delgada, Portugal); ³Instituto Tecnológico e Nuclear (Lisboa, Portugal)

Cardiovascular diseases remain the leading cause of mortality in Western populations. Dyslipidemia, hypertension, diabetes, obesity, and tobacco smoking are the main risk factors for atherosclerosis and its

thrombotic complications. However, these factors alone cannot account for all of the deaths caused by vascular pathologies. The possible interaction of some trace element levels with atherogenic diseases is not completely clarified. On the other hand, the intra- and extracellular concentrations of elements playing an important function in the electrolytic equilibrium could partially be associated with cardiovascular dysfunctions and other associated pathologies. The aim of this study was to evaluate trace elements (Fe, Ni, Cu, Zn, Se) and electrolytic-balance-associated elements (K and Ca) in plasma and blood cells of patients with stabilized atherosclerosis. Significant differences between patient and control groups were observed in blood cell K, Fe, and Zn concentrations, while plasma K, Ca, Fe, and Zn levels exhibited significant differences between groups. Results will be discussed taking into account the main function of those elements and the etiology of atherosclerosis. The relationship of results with the studied cardiovascular risk factors will be also considered.

3.P03

Magnesium in the serum of patients treated surgically

J. Krystyna Sadlik¹, Zbigniew Kopański², Wojciech Piekoszewski¹, and Małgorzata Schlegel-Zawadzka³

¹Institute of Forensic Research (Kraków, Poland);

²Department of Oncological Surgery, Military Clinical Hospital (Kraków, Poland); ³Department Human Nutrition, Faculty of Health Care, Jagiellonian University (Kraków, Poland)

Magnesium is one of the most important elements, fulfilling significant and complex functions in the body. Changes in concentration of magnesium in the serum can be linked with the occurrence of many varied pathological states. The aim of this work was to present some findings from our studies that we carried out earlier concerning concentration of magnesium in serum in patients with hypertension, disorders of the synostosis, thrombophlebitic complications of the lower limbs, after removal of the gall bladder by laparoscopy or laparotomy, with disturbances of the rhythm of the heart. In all the mentioned groups of patients with postoperative complications,