

Conclusion: the balance between the antioxidant enzyme activity is correlated to heart function in adults. The age-dependent modification of this balance is correlated to the decrease in post-ischaemic recovery of function.

Further studies are now in progress to confirm these data and to set up new nutritional interventions to reduce the consequences of cardiac ageing.

Serum Selenium Levels and Glutathione Peroxidase Activities in Women with Breast Cancer

A. Brtková, V. Bella*, T. Magálová, M. Kudláčková, K. Babinská, A. Béderová

Research Institute of Nutrition, Bratislava, Slovak Republic

*National Institute of Oncology, Bratislava, Slovak Republic

Breast cancer represents the most common type of cancer in women. Breast cancer incidence as well as mortality and morbidity rates has increasing trends in Slovakia. It has been shown that free oxygen radicals might play an important role in the etiology of breast cancer. Selenium is an integral part of antioxidant enzyme glutathione peroxidase (E.C. 1.11.9) that by scavenging potentially harmful peroxides produced by normal cellular metabolism protects cellular membranes and cellular compartments from oxidative damage. This study was undertaken to analyse serum selenium levels and plasma glutathione peroxidase activities in women with breast cancer and benign breast disease as well as in women that underwent surgery. A total of 28 women with breast cancer (aged 37-78 a) and 24 women with benign breast disease (aged 36-65 a) as well as 14 women that underwent surgery (aged 39-76 a) participated in this study. The diagnosis of breast cancer and benign breast disease was based on radiological (mammography and sonography) and histological findings. Serum selenium levels were assessed by EAAS method (Jacobson and Lockitch, 1988). Plasma glutathione peroxidase activities were assessed by Paglia and Valentino (1967). The results of patients were compared with those of 92 apparently healthy women (women with the weak dysplasia were covered in the control group) aged 39-64 a. We did not observe significant differences between serum selenium levels (mean \pm SD) in women with breast cancer ($0,904 \pm 0,221 \mu\text{mol/L}$), benign breast disease ($0,936 \pm 0,206 \mu\text{mol/L}$) as well as women that underwent surgery ($0,884 \pm 0,181 \mu\text{mol/L}$) in comparison with control group ($0,887 \pm 0,199 \mu\text{mol/L}$). There were no significant differences between plasma glutathione peroxidase activities in women with breast cancer ($4,16 \pm 2,41 \text{ U/ml}$) benign breast disease ($2,78 \pm 1,89 \text{ U/ml}$) as well as women that underwent surgery ($2,64 \pm 2,40 \text{ U/ml}$) and the control group ($3,48 \pm 2,45 \text{ U/ml}$). We observed positive correlation between serum selenium concentrations and plasma glutathione peroxidase activities in control group ($r=0,226$). No significant correlation was observed between serum selenium levels and plasma glutathione peroxidase activities in the patient groups.

Copper and Calcium in the Serum of Diabetic Patients

N. Car, A. Car, V. Bozиков, Z. Metelko

Vuk Vrhovac Institute for Diabetes, Dugi dol 4a, Zagreb, Croatia

Serum copper and total calcium as well as blood glucose level were studied in diabetic patients. The study included three groups, each consisting of 15 subjects: healthy controls, patients with non-insulin dependent (NIDDM) and insulin-dependent diabetes mellitus (IDDM). All subjects had comparable sex, age and diabetes duration.

We determined the level of copper (normal value $11-23 \mu\text{mol/L}$) and total calcium (normal value $2.14-2.53 \text{ mmol/L}$) in the serum, as well as fasting blood glucose. Serum copper and total calcium were determined by means of atomic absorption spectrophotometer.

The level of total serum calcium in the control group was $x_{15}=2.35 \pm 0.58$, whereas in NIDDM group it was $x_{15}=3.79 \pm 0.20$, and in IDDM group $x_{15}=3.86 \pm 0.84 \text{ mmol/L}$ ($p < 0.01$ between the controls and NIDDM and IDDM patients).

Serum copper level in the control group was $x_{15}=19.93 \pm 5.57$, in NIDDM $x_{15}=11.37 \pm 1.99$, and in IDDM $x_{15}=12.60 \pm 2.83 \mu\text{mol/L}$ ($p < 0.01$ between the controls and NIDDM and IDDM patients).

The study of a connection between copper and total calcium in the sera of subjects showed negative correlation between the control group and the group with IDDM ($r = 0.6554$ $p < 0.01$).

Diabetic patients are exposed to a chronic oxidative stress involving an important role of copper. A decreased level of copper in diabetic patients may enhance the development of osteopenia. An increased disintegration of bones in these patients leads to an increase in total serum calcium. The negative correlation between copper and total calcium in the serum of patients might help to explain the more pronounced osteopenia in IDDM patients.

Immunostimulating Effect of Zinc Supplement During Recovery of Severe Malnourished Children

Ph. Chevalier*, R Sevilla, L Zalles, G Belmonte, E Sejas
CRIN, Hospital Materno Infantil "German Urquidi", Cochabamba, Bolivia

*LNT, ORSTOM, BP 5045, 34032 Montpellier cedex 1, France

Recovery of normal anthropometric values was observed after one month of rehabilitation in young children suffering from severe protein-energy malnutrition. But one another month was required for immunologic recovery and the children were kept in the rehabilitation ward until nutritional and immunological recovery (Chevalier Ph et al. J Nutr Immunol, 1994; 3:27-38).

To accelerate the immune rehabilitation of the children, we investigated the effect of a daily zinc supplementation (2 mg per kg) as an immuno-stimulatory treatment. The percentage of immature lymphocytes and non-invasive ultrasonography of the thymic mass were used to estimate the immune rehabilitation.

Because the hospital ethical committee refused a comparative study with placebo, a case-historically matched cohort study of 32 malnourished children was planned. Children of both groups underwent nutritional rehabilitation for two months. In addition, the test group received a daily zinc supplementation.

In both groups anthropometric recovery was achieved in one month. Children with daily zinc supplementation showed faster thymic mass recovery than controls and reached immune recovery in one month while another month was needed for controls.

Zinc supplementation did not hasten anthropometrical recovery but significantly reduced the time for immunological recovery. Zinc supplementation acted as an immune-stimulating factor so that immune and anthropometric recoveries coincided.

Zinc supplement allowed the discharge of "anthropometrically and immunologically healthy" children after only one month of treatment. Hospitalization time could be shortened and the cost reduced by half.

Study of Magnesium Absorption Using ^{25}Mg Stable Isotope and ICP/MS Technique in Rat

C. Coudray, J. C. Tressol, E. Gueux, E. Soeminar, J. Bellanger, D. Pepin* and Y. Rayssiguier

Laboratoire des maladies métaboliques, INRA de Theix-Clermont-Ferrand, 63122 Saint Genès Champanelle, France

*Laboratoire d'hydrologie, Institut Louis Blanquet, Faculté de Pharmacie, Université Blaise Pascal, 63000 Clermont-Ferrand, France

Fonds Documentaire ORSTOM
Cote: B* 8217 Ex: 1

Journal of Trace Elements in Medicine and Biology

Volume 9, No. 4, pp. 193-256, December 1995

Contents

Original Paper

- Br, Rb, Zn, Fe, Se and K in Blood of Colorectal Patients by INAA and PIXE
*C. Shenberg, H. Feldstein, R. Cornelis R., L. Mees, L., J. Versieck, L. Vanballenberghe,
 J. Cafmeyer and W. Maenhaut* 193

Clinical Notes

- Iron, Copper and Zinc Levels in Urine: Relationship to Various Individual Factors
E. Rodríguez R. and C. Díaz R. 200
- Pathogenetic Mechanisms of Hypomagnesemia in Alcoholic Patients
M. Elisaf, M. Merkouropoulos, E.V. Tsianos and K. C. Siamopoulos 210

Technical Note

- Chemometric Methods Applied to an ICP-AES Study of Chemical Element Distributions in Autopsy
 Livers from Subjects Affected by Wilson and β -Thalassemia
C. Aragoni, G. Crisponi, V. M. Nurchi, R. Silvagni, R. Scot, R. Ambu, V. Costa and G. Faa 215

Abstracts

- Abstracts of the 5Th International Congress on Trace Elements in Medicine and Biology:
 Therapeutic Uses of Trace Elements 222

- Review of Publications 248

- Meetings 254

- Society for Minerals and Trace Elements (GMS) 255

Fonds Documentaire ORSTOM

Cote: B*8217 Ex: 1

Fonds Documentaire ORSTOM



010008217

Indexed in Current Contents