Plasma levels of copper, manganese and selenium in an adult population in southern Spain: influence of age, obesity and lifestyle factors.

Sánchez C, López-Jurado M, Aranda P, Llopis J.

Department of Physiology, Institute of Nutrition and Food Technology, University of Granada, E-18071 Granada, Spain.

OBJECTIVE: Copper, manganese and selenium are elements involved in protecting the body against oxidative stress. Determining their plasma level may contribute to assessing the health and nutritional status of populations. The aim of this study was to assess factors influencing copper, manganese and selenium plasma levels in an adult Mediterranean population and to identify groups at risk of deficiency.

METHODS: A cross-sectional survey was carried out in Andalusia, a region in southern Spain. Blood samples were obtained in a random subsample of 340 subjects. Food consumption was assessed by 48-h recall. Height, weight, skinfolds, waist and hip circumferences were measured. Copper, manganese and selenium were measured in plasma. Information about physical exercise, educational level, alcohol and smoking habits was obtained with a structured questionnaire.

RESULTS: Plasma copper was found to be higher in women than among men. Hypocupraemia was found in 4.4% of the population, while 9.7% presented hypomanganesemia. Moreover, 86.5% presented plasma selenium values below 125 microg/L (cutoff for optimal glutathione peroxidase activity). No association was found between plasma elements, anthropometric indices and lifestyle factors; there were tendencies, no more. Copper tended to decrease in obese and increase in sedentary, while selenium tended to decrease among smokers. Plasma Cu was positively correlated with the consumption of monounsaturated and polyunsaturated fats. Plasma Mn was directly correlated with the consumption of dairy products. Levels of Se were positively correlated with age, the consumption of fruit, vegetables, energy obtained from carbohydrates, and the consumption of fibre, and inversely correlated with the consumption of meat and sweets.

CONCLUSIONS: Our results provide an estimate of the copper, manganese and selenium status in the adult population of southern Spain. The correlations found for Se suggest that there is a tendency for Se levels to be better maintained among the population that shows a stronger preference for the traditional diet.

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