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PHONE: 322 252 1490 ▪ FAX: 322 252 2775 ▪ E-MAIL: pelmi d@s met.be

SELENIUM STATUS AND ITS RELATIONSHIP WITH CARDIOVASCULAR RISK FACTORS IN TWO PORTUGUESE POPULATIONS FROM S.MIGUEL ISLAND - AZORES ARCHIPELAGO

A.M. Viegas - Crespo[1], M.L. Pavão[2], M.C.Santos[1], A. Raposo[3] and J. Neve[4]
[1]Dep. Zool. Anthrop., FCUL, Lisbon, Portugal; [2]Dep. Biothecnology, UA, Ponta Delgada , Azores; [3]Ribeira Grande Health Centre, Azores;[4] Pharmacy Inst., ULB, Brussels, Belgiam

INTRODUCTION

Selenium forms part of the active site of glutathione peroxidase enzymes which prevent lipid peroxidation in mammals and take part in the direct protection of endothelial cells against reactive oxygen species that have been implicated in atherogenesis; moreover these enzymes are involved in the biosynthesis of arachidonic acid derivatives platelets and in the regulation of lipoprotein cholesterol metabolism (1-4).

To provide further insight into the possible role of selenium in cardiovascular disease, we investigated the assotiation between selenium status and generally accepted cardiovascular risk factors in two populations living in rural and fishing communities of Rabo de Peixe - S. Miguel Island of the Azores Archipelago.

SUBJECTS AND METHODS

Subjects

The totality of subjects were 140 women and 92 men aged 20 to 60 years. The vollunteer donors were non-abusers of alcohol, tobacco or drugs. They had neither any recognizable chronic diseases, nor any history of cardiovascular conditions and/or heart surgery.

Age and sex of the subjects, as well as drugs, alcohol and tobacco consumptions were registered. They were asked to begin to fast 12 h before blood sampling, which occurred in the morning. The collection was carried out from May to July 1996, in the Health Centre of Ribeira Grande.

Methods

Serum was removed after centrifugation and an aliquote kept frozen at -20 ° C, until analysed for selenium. HDL proteins were obtained by adding magnesium phosphotunstate to fresh samples to precipitate other lipoproteins. HDL cholesterol and serum total cholesterol, as well as serum triglycerides were determined by enzymatically procedures (Boehringer, Mannheim, Germany). LDL cholesterol was evaluated by the Friedwald formula. Serum selenium was determined by a direct electrothermal atomic absorption spectrometric procedure (5).

RESULTS AND DISCUSSION

Values of the analysed parameters (mean±SD) are shown in the table 1.

Where the lipid profile is concerned, in spite of both populations having serum lipid parameters within normal values (mainly cholesterol levels), an increase ($P<0.05$) in serum cholesterol concentration was observed in the rural population as compared to the fishing one.

Besides the sexual differences observed in selenium levels within the same population ($P<0.05$), as it can be seen in the table, the most striking result is the lower serum

selenium concentrations observed in men of the rural region as compared to those of the fishing population ($P<0.01$).

Table 1 - Selenium and lipid parameter concentrations in serum of the subjects from rural and fishing populations of S. Miguel Island

Parameter	Sex	Rural Pop.	Fishing Pop.
Selenium	M	84±22	97±18*,**
µg/L	W	78±18	89±12
Cholesterol	M	211±60	186±37**
mg/dL	W	205±48	197±42
HDL cholest	M	47±11	47±14
mg/dL	W	49±13	48±11
LDL cholest	M	133±49	118±31
mg/dL	W	127±44	138±58
Triglycerides	M	148±107	138±58
mg/dL	W	133±66	118±62

*Asterisks denote the significance of the t test of differences between means for women (W) and men (M) in the same region (*P<0.05) and for the same sex between regions (**P<0.01; ***P<0.05).*

Selenium levels are in the same range as values obtained in population of Lisbon and in other european countries . In addition, these levels seem to be higher in men than in women, what it is similarly reported for different populations by many investigators (6-8).

The low selenemia observed in the rural community as compared with the fishing community of Rabo de Peixe is perhaps due to poor consumption of animal proteins (fish and meat) and high consumption of vegetables. Among some of the factors which could modify the selenium status of men, the most important may be its intake through diet (8).

However, only an analysis of the element in diets, both in terms of quantity and the chemical form in which the element is included, would clarify this matter.

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