Gender Modifies Association Between Serum Selenium Concentration and Erythrocyte GPX1 Activity.

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Risikofaktorer for Astma hos Voksne

Aim:
To investigate whether gender have an influence on the association between serum selenium concentration and erythrocyte GPX1 activity.

Methods:

Study population:
In a cross-sectional Danish multicenter-study of asthma (RAV, using ECRHS protocol) 1,191 subjects aged 20-44 years were enrolled, 760 were invited as randomly selected control group. Analysis of GPX1-activity was performed in a subgroup selected by GPX1 Pro198Leu genotypes, but otherwise randomly selected. 179 subjects were eligible for analysis of associations between selenium and GPX1activity.

GPX1-genotype: The enzyme was genotyped (pro198leu) by real-time PCR.

GPX1-activity: Activity was analyzed spectrophotometrically in erythrocytes with T-Butyl Hydroperoxide as substrate.

Selenium:
Analyses of selenium in serum used the AOAC (Association of Official Analytical Chemists) modified fluometric method validated for investigations of selenium in organic material.

Table 1. Characteristics of study population

	Female (n=90)	Male (n=89)
Selenium, ng/ml (SD)*	85.3 (15.0)	83.8 (11.7)
GPX1-activity, U/g protein (SD)	56.1 (8.1)	52.4 (8.2)
Age, year (SD)	34.8 (7.1)	35.5 (6.8)
Smoking habits, n		
Never smoker	51	44
Former smoker	19	17
Current smoker	19	28

Demographic data en subjects eligible for analysis between selenium and GPX-activity. * p = 0.003

Table 2. Interaction analyses

	Unadjusted	Adjusted ×
Gender (male vs. female)	-25.3 (p = 0.001)	-24.4 (p = 0.002)
Selenium (pr. 10 ng/ml)	-0.08 (ns)	-0.28 (ns)
Interaction	2.6 (p=0.005)	2.5 (p=0.006)

Analyses of interaction between gender and selenium on GPX1-activity in linear regression presented as change in GPX1-activity.
× Adjusted for age, study center and smoking habits,

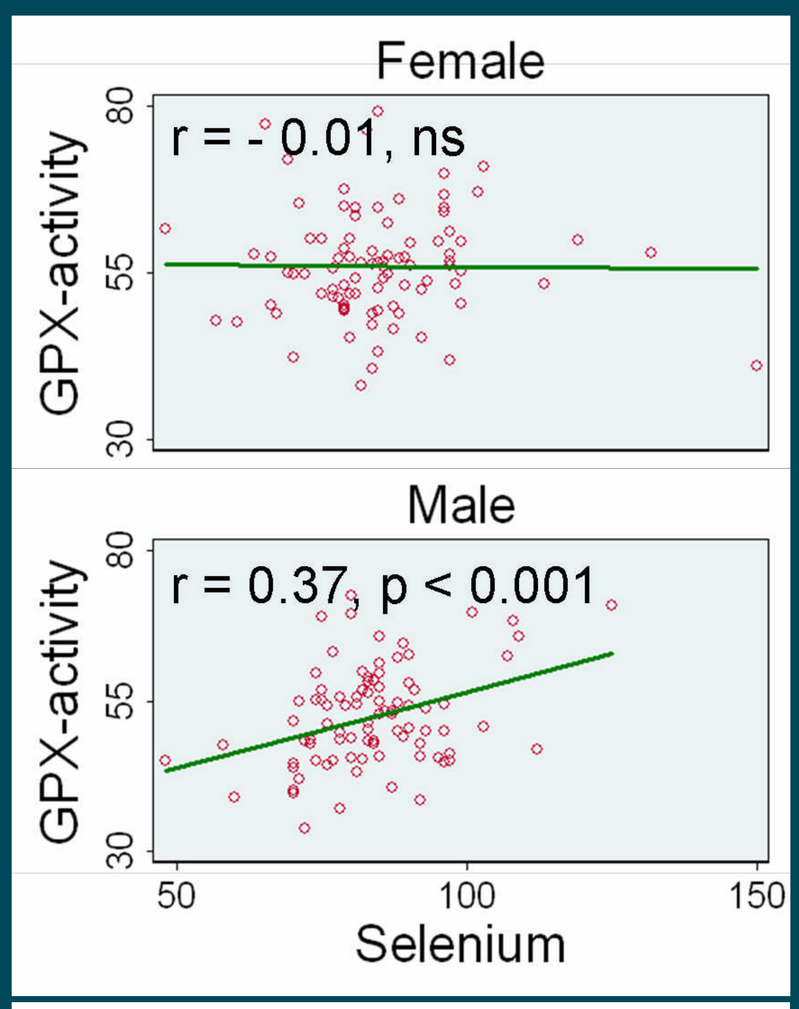

Figure 1 Correlation between GPX1-activity in erythrocytes and serum selenium concentration

Results: Females had higher serum selenium concentrations than men (table 1). Serum selenium correlates with erythrocyte GPX1-activity (r=0.16, p=0.04), but when analysing genders separately the correlation was only significant in males (figure 1). Significant interaction between gender and selenium on GPX1-activity was seen (table 2).

Acknowledgement:
T Sigsgaard, LR Skadhauge, D Sherson, J Baelum, G Thomsen, L Kjøller
Fund providers:
Danish Lung Association, West Danish Research Forum for Health Science, Spar Nord Foundation, and Herta Christensens Foundation.

Conclusion:

In a randomly selected population of young Danes only males shows correlation between serum selenium concentration and erythrocyte GPX1 activity

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