

STUDY OF THE LEVEL OF SELENIUM AND GLUTATHIONE PEROXIDASE IN THE ELDERLY

Noha Mohamed Hassan Elsabagh, Nany Hasan El Gayar, Nermeen Ahmed Mohamed Eldabah,* Mayasa Othman Mussa

Department of Internal Medicine, Geriatric Unit, Department of Clinical and Chemical Pathology, Faculty of Medicine, Alexandria University

INTRODUCTION

Ageing can be described as a degenerative process of decline in physical function to maintain homeostasis leading to increased possibility of death. Serum selenium and Glutathione peroxidase show progressively decreased as age increased.

AIM OF THE WORK

To Study the level of plasma selenium and serum glutathione peroxidase in the elders compared to the young.

SUBJECTS AND METHODS

Prospective study, recruited 50 participants of both genders, 40 patients aged 65 years and more, and 10 apparently healthy participants aged less than 65 years served as a control group. Baseline demographic and health information, routine laboratory investigations, and blood plasma samples of Selenium (Se) and serum Glutathione peroxidase (GPx) were collected between March 2022 till October 2022. GPx Activity was measured using colorimetric method by spectrophotometry and Se levels were measured using Graphite Furnace (GF500, Australia), At the Medical Research Center at Alexandria main hospital.

RESULTS

GPX($p=.001$) and Se levels($p<.001$) were statistically significant higher in control group compared with elders' group. Significantly negative correlations were obtained between Se with age ($t= -0.237$, $p=.017$), and GPx with age ($t=-0.267$, $p=.008$) for elders group and non-significant correlations for control group in both Se with age($t= -0.023$, $p=.929$) and GPx with age($t= 0.068$, $p=.787$). Significant positive correlation was revealed between Se and GPx in the elders ($t=0.287$, $p= .004$), while in control non-significant negative was obtained ($t=-0.244$, $p= .325$). $p= .325$

Table 1: Se concentration ($\mu\text{g/L}$) between the two studied groups

Selenium concentration ($\mu\text{g/L}$)	Group	
	Elderly group (65 years or above) (n=40)	Comparison group (below 65 years) (n=10)
- Min-Max	18.76-87.53	69.50-108.97
- Mean \pm SD	40.93 \pm 17.02	88.59 \pm 14.65
- 95.0% CI of the mean	35.49-46.38	78.11-99.08
- Median	38.24	83.08
- 95.0% CI of the median	31.69-43.21	78.12-104.24
- 25 th Percentile – 75 th Percentile	27.83-48.34	78.12-104.24
Test of significance p-value	$Z_{(MW)}=4.560$ $p<.001^*$	

Table 2: GPx Activity between the two studied groups

Glutathione Peroxidase activity	Group	
	Elderly group (65 years or above) (n=40)	Comparison group (below 65 years) (n=10)
- Min-Max	15.00-217.50	49.75-193.17
- Mean \pm SD	49.78 \pm 33.46	86.83 \pm 42.35
- 95.0% CI of the mean	39.08-60.48	56.54-117.12
- Median	42.99	78.29
- 95.0% CI of the median	37.50-50.00	53.45-102.40
- 25 th Percentile – 75 th Percentile	33.66-55.61	53.45-102.40
Test of significance p-value	$Z_{(MW)}=3.422$ $p=.001^*$	

Table 3: Correlations among age (years), BMI (kg/m^2), Selenium concentration ($\mu\text{g/L}$), and Glutathione Peroxidase activity

	Selenium concentration ($\mu\text{g/L}$)	Glutathione Peroxidase activity(U/L)
Age (years)	n=50 $t= -0.237$ $p=.017^*$	n=50 $t= -0.267$ $p=.008^*$
BMI (kg/m^2)	n=50 $t=0.110$ $p= .271$ NS	n=50 $t=0.140$ $p= .163$ NS
Selenium concentration ($\mu\text{g/L}$)		n=50 $t=0.287$ $p= .004^*$

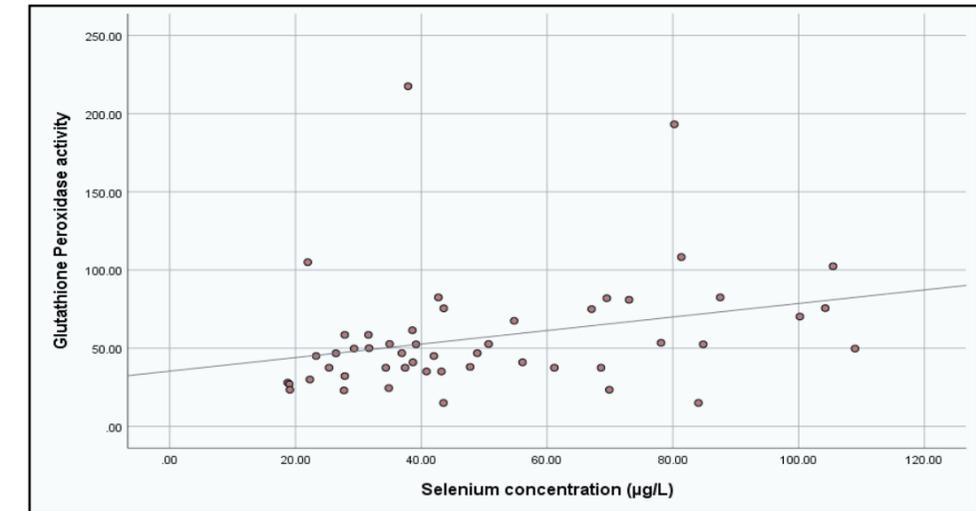


Figure: Scatter plot with best-fit (regression) line showing a positive correlation between Selenium concentration ($\mu\text{g/L}$) and Glutathione Peroxidase activity (U/L).

CONCLUSION

In conclusion, our study showed that both Se and GPx levels of the elderly were observed to be decreased with increasing age. And a positive correlation between Se and GPx was obtained while inverse association of Se and GPx were documented with respect to the age in the elderly population.