

A Spectroscopic Study on the Level Of Serum Selenium in Northern Baghdad Subject

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ABSTRACT:

BACKGROUND:

This work is performed to measure the concentration of serum selenium in northern Baghdad subject. Selenium is one of the trace element that plays an important role in physiological functions of human body.

MATERIALS AND METHODS:

Selenium levels of blood serum were measured using furnace atomic absorption spectrophotometer.

RESULTS :

The results obtained in this work showed a decrease in selenium level and the reduction is proportional to the duration of age. This can be explained principally due to the type of diet and malabsorption young subject may differ in certain diet intake.

KEY WORD: selenium, spectroscopy.

INTRODUCTION:

Selenium is one of the trace element, which includes in addition iron, copper, iodine, chromium, and zinc. All are required for physiological functions in amounts less than 100 mg daily⁽¹⁾.

Normal serum concentrations of selenium is ranged from 10-34 ug/dl , its concentration in blood is highly responsive to changes with level the diet over a wide range⁽²⁾.

Human dietary intake of selenium is about 55-110mg per year in blood its level of less than(6.7ug/dl) indicates a deficient level. Selenium appears to functions primarily in the metalloenzyme flotation peroxides which destroys peroxides in the sytosol since the effect of vitamin E on peroxide formation is limited primarily to membrane, both selenium and vitamin E appear to be necessary efficient scavenging of peroxides.

Selenium deficiency has been shown to predispose children to a cardiomyopathy called keshan disease⁽³⁾ . populations at risk for selenium deficiency include those living in areas with low selenium content in the soil used for growing foods, those who are malnourished in general, those with catabolic disease and those inflammatory bowel disease. Low selenium levels may be observed in a variety of

pathological conditions, including colon, gastric, and pancreatic and cirrhosis^(4,5).

Selenium acts as an antitoxic element can bind Cd, Hg, and other metals , it mitigates their toxic effect, even the toxic level in tissues remain unchanged, on the other hand selenium may be toxic when ingested water containing a high amount of the metal⁽⁶⁾.

SUBJECTS AND METHODS:

Thirty subjects were included in the study. They were selected randomly from north area of Baghdad during the period between april 2002 to march 2003 . all patients were interrogated and full history was taken regarding age, sex, family history of same lesions.

METHODS:

A(5ml) sample of blood was taken from subjects and allowed to clot then centrifuged at 3000 rpm for 15 minutes . the clear serum was transferred to a plastic tube by the disposable syring and tapped by a plastic stopper, then stored a deep frozen at -20c before analysis.

Analyses of samples were carried out by using furnace atomic absorption spectrophotometry (A.A.670). samples were diluted (1:4) with deionized water and measurement directly at 196nm a standared curve was made from dilution of 1 mg/ml.

RESULTS:

Asignificant decrease in serum level of selenium concentration among different ages was shown in table 1.

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Table 1:- correlation of serum selenium level among ages.

Groups	Group of ages(years)	No of subjects	Concentration of selenium(ug/dl)
1	15-25	9	8.7 ± 0.3 *
11	26-36	10	7.2± 0.25*
111	37-50	11	6.5 ± 0.3

*0.0005 significant

DISCUSSION:

Selenium as a trace element has a fundamental importance to human health. As a constituent of selenoproteins, selenium has structural and enzymatic roles, in the context being best-known as an antioxidant and catalyst for the production of active thyroid hormone⁽⁹⁾.

In our study it has been shown clearly that there is an inverse relationship between the level of serum selenium and the age of the groups under investigation. As shown in table 1, group 1 have a significant higher level than group 11,111. These results may be explained principally due to the type of diet and malabsorption young subject may differ in certain diet intake^(6,7). A deficiency of protein (as a diet status in Iraq) which is necessary for normal function of glutathione peroxidase may be a cause for such results. Also vitamin E acts simultaneously with selenium, a deficiency of it may have another effect⁽⁸⁾.

It is worth mentioning that the reduction in selenium level may be due to the fundamental of the immune system which causes a dysregulation of the immune system and leads to possible infection later on. Previous studies have shown that an elevated selenium intake may be associated with reduced cancer risk.

CONCLUSION:

The age appears to be a principal factor for the decrease in the level of selenium.

Further works are required to show the effect of high selenium intake and these relations with some disease, which might help in the treatment.

REFERENCES:

1. Mayes P.A Nutrition, digestion, Murray R, Granner. Harpers Biochemistry 1st ed. Appleton and Lange. 1996:62635.
2. Underwood E.J. trace elements in human and animal nutrition 9th ed. Academic Press. 1977; 106-120.
3. William J Marshall, Clinical chemistry, 4th ed. New York, 2000:pp366.
4. Schwartz.K, Clin. North, Amer, 1976; 60:745.
5. Falchuk KH. Disturbance in trace elements in: Harrison's principles and practice of internal medicine 14th ed. New York: McGraw-Hill 1998;489-92.
6. Hughes.M.N, The inorganic chemistry of biological processes, 2nd ed, Sohn Wiley(1998).
7. Sumino.K.R and Kitamura.S, Nature, 1977:268-73.
8. Donald, Anada S, Prasad. Trace elements in human health and disease 2nd ed. Academic press, New York, London, 1976:117-119.
9. Margaret P. Rayman. The importance of selenium to human health, the Lancet, 2000:365;233-41.