Ferritin as Biomarker of Covid-19 Disease

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Abstract

Ferritin was determined by fluor escence Immunoassay (AFIAS) techniqu for quantative analysis of ferritin in human serum . The linear range from (10 – 1000) ng/ml with regression equation and coefficient correlation between tow test were   y = 0.99198 x + 0.56317 and R = 0.9897 respectively . The technique provided accurate and reliable results with limit of detection was determine to be 4.51 ng/ml . Quality and contro test should be perform immediately afte new test to ensure the test perfor med is not altered

Introduction

Ferritin as a major iron storage makes iron available for cellular processes and protecting from toxic effect of iron [1−3]. In clincal medicine ferritin is utilized [4] as marker of total body iron stores . This study suggests that ferritin provides a moe sensitive , specific and reliable for diagnosis of the prognosis of Covd-19 disease. The test uses a sandwich immnno detection method , the detector anti-body is buffer bind to antigen in sample forming antigen-autiboo complexes and migrate onto nitro-cellulose matrix to be captured bu other immo-bilized-antibody on test strip. The more antigen insample forms the more more antigen in sample forms the more antigen-antibody complex and lead to stronger intensity of flurorescence signal on detector anti-body [5].

Experimental work and Results

This search was applied on many patient suffering from Covid-19 disease and their ages belween (17-74) years from two genders. Health person were used as control for comparison . The study was follow up on measurment of ferritin for one patient (58 years old) after the blood sample were collect from the vein , centrifugatcd and (100µl) from the serum was injected in the (AFIAS) techniqne , the result obtain were recorded in table

Table (1)   Concentration of freeitin in blood

Time (day)	Concentration (ng/ml)	
1	39 ± 3	
2	45 ± 5	30-350ng/ml health person
3	55 ± 2	
4	430 ± 5	

5	550 ± 4	
6	825 ± 5	
7	850 ± 5	
8	859 ± 6	
9	860 ± 9	
10	$910 \pm \theta$	

The accuracy of AFIAS was determi-ned and listecl in Table (2)

Table (2) **accuracy of AFIAS**

Ferritin added ng/ml	Ferritin found ng/ml	Recovery %
0	N.D	/
5	45	90
5	48	96
100	98	98
500	488	97

The precision of AFIAS was described in Table (3)

Table (3) **Precision of AFIAS**

Ferritin ng/ml	Mean	SD	CV %
15	14.89	0.97	6.54
150	149.11	4.08	2.73
450	451.32	7.95	17.1

Discussion

The result in Table (1) show an increasing in concentration of Ferritin after fourth day from the suffering from Coved-19 disease this due to ;

(1) Ferritin is protein responsible for storage of iron . In sever case of Coved-19, the virus attack respiratory system call and reduce production of Hemoglobin (protein responsible for transport oxygen to cell of body and return carbon dioxide to lungs6 to get it out of the body) , this case lead to hypoxia , therefore the body increase production of hemoglobin and ferritin resulting to an increase the viscosity of blood leading to many clots in lungs [6].

(2) High level of leading to increase thr activity of macrophage cells leading to cytokinase storm which cause demo to heart , kidney and brain , finally death [7].

The results in tables (2) and (3) illustrated that the technique used in this work high accurate and precise

Conclusion

High level of Ferritin in blood morr than 1000 ng/ml indicates that sever case of Covid-19 disease exists

References

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