



Abstract

Thyroid Function has been evaluated using Radioimmunoassay (RIA) and enzyme-linked-immuno-sorbent-assay (ELISA) Techniques as a comparative study to determine the

accuracy sensitivity and specificity in addition to correlation with body mass index (BMI). For Tri-iodothyronine (T3) measure by RIA, relatively ELISA showed sensitivity, specificity and accuracy of 93.8%, 100% and 99.1% respectively and for thyroxin (T4) ELISA showed sensitivity, specificity and accuracy of 79.3%, 89.4% and 86.8% respectively. And for Thyroid-Stimulating hormone(TSH) ELISA showed sensitivity, specificity and accuracy 72.4%, 90.6% and 86% respectively and relative to RIA technique which is considered as standard goal .And for compensating the ELISA results to be same as RIA the following coefficient 0.72, 6.8 and 0.23 for T3,T4 and TSH respectively could be used. Also there is inverse linear relationship between the BMI and T3 and T4 using ELISA whereas the amount of T3 and T4 decrease by 0.006nmol/kg/m^2 and 0.051nmol/kg/m^2 respectively. But TSH shows a direct linear relationship with BMI where TSH slightly increased by 0.007nmol/kg/m^2 .

الخلاصة

قد أجريت هذه الدراسة خلال الفترة من 2012 الى 2014 من قسم قياس المناعة الاشعاعيه فى المركز القومي للعلاج بالاشعه والطب النووي بالخرطوم ومستشفى السلاح الطبي . وكان الهدف من هذه الدراسة هو تقييم وظيفه الغده

الدقيـه عن طريق جهاز RIA وجهاز ELISA ومقارنـه وتـحديـد كل من الدقيـه و الحساسيه والنوعيـه وعلاقتها مع كتله الجسم .،وقـد اظهـرت ELISA الحساسيه والنوعيـه والدقيـه بالنسبـه لهرمون T3 بنسبـه 93.8% و 100% و 99.1% علي التوالي. و هرمون T4 بنسبـه 79.3% و 89.4% و 86.8% علي التوالي وهرمون TSH 72.4% و 90.6% و 86% علي التوالي مقارنـه مع جهاز RIA. ومساواه نتائج ELISA مع RIA بمعامل 0.72، 6.8 و 0.23 لكل من T3 و T4 و TSH علي التوالي . و أيضا هناك علاقة خطية عكسية بين مؤشر كتلة الجسم و T3 و T4 باستخدام ELISA حيث ان كمية T3 و T4 تنخفض بنسبة 0.006 نانومول/كجم/مترمربع و 0.051 نانومول/كجم/مترمربع على التوالي. لكن TSH يظهر وجود علاقة خطية مباشرة مع BMI حيث TSH يزيد زيادة طفيفة بمعدل 0.007 نانومول/كجم/مترمربع.

Dedication

To My father **Mohamed**: for earning an honest living for us and for supporting and encouraging me to believe in my self

To My mother **Seham**: strong and gentle soul who taught me to trust in Allah , believe in hard work and that so much could be done with patience

To my dear grandmother **Mufida Siddig** for being my first teacher I will never finish to thank her for all help and love that she gave me

To my sweet husband **M.Abd Elbasit** who has been a constant source of support and encouragement..I am truly thankful for having him in my life

To my beautiful son **hazim**

To my lovely sisters **Ryan, Randa ,Renad and Ruba**

To My lovely friend **Yousra Aldaleel**

To all my family and friends.

I hope that I can make them proud of me the same way I am proud of having all of them

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List of contents:

Abstract	li
الخلاصة	lii
Dedication	lv
Acknowledgment	v
List of Tables	lx
List of Figures	x
List of Abbreviations	xii
Chapter one	
1.1Anatomy of Thyroid Gland	1

1.2Physiology of Thyroid Gland	2
1.3Thyroid Problems	3
1.4Thyroid Function Test	3
1.4.1 Definition	3
1.4.2purpose	4
1.4.3Precautions	4
1.5Other Tests use to diagnose Thyroid Gland	6
1.6Problem of the study	14
1.7Objectives	14
1:7:1Specific Objective	15
1.8Significant of the study	17
1.9Overview Of The Study	17
Chapter two	
2.1Immunoassay	16
2.2Factor that affect the reaction	18
2.3Radioimmunoassay	18
2.3.1Competitive Radioimmunoassay	19
2.3.2Non-Competitive radioimmunoassay	21
2.3.3Advantages of radioimmunoassay	22
2.4ELISA	23
2.4.1Basic Principle Of ELISA Test	24
2.4.2Types Of ELISA	25
2.5 literature review	31
Chapter three	
3.1Instrumentation	58
3-2 The main Equipment and reagents used in RIA	58
3:2:1 material for measurement thyroxin(T4) by RIA	58
3:2:2 Materials for measurement tri-iodothyronine (T3) by RIA	59
3:2:3Material for measurement thyroid stimulating hormone(TSH) by RIA	60
3:3 The RIA method:	60
3-3-1: T4	60
3.3.2:T3	62
3.3.3TSH	63
3.4 ELISA	66
3.4.1 Material used for ELISA test	66

3.4.2 Basic Principle of ELISA test	70
Chapter four	
Results	74
Chapter five	
5.1 Discussion	78
5.2 Conclusion	80
5.3 Recommendation	81
Reference	82
Appendixes	
Appendix A (data collocation table)	92
Appendix B (journal of experimental and clinical medicine)	95

List of table

Table (1.1) normal value of thyroid lab investigation.	7
Table (4:1) cross tabulation table between RIA and ELISA assay result of T3	74
Table (4:1) cross tabulation table between RIA and ELISA assay result of T4	74
Table (4:1) cross tabulation table between RIA and ELISA assay result of TSH	74

List of figure	
Figure 1-1 location of thyroid gland in the body	1
Figure 1-2 thyroid tissue	2
figure 2:1 competitive RIA	20
Figure 2:2 Curve of competitive method	20
figure 2:3 non competitive method	21
figure 2:4 curve of non-competitive method	22
Figure 3-1 standard calibration curve	65
Figure 3-2 General principle of RIA	66
Figure 3-3 Elecsys 2010	73
Figure (4.1) scatter plot show an inverse linear relationship of BMI and thyroid hormones assay result using RIA method; (A) T3, (B) T4 and (C) TSH	75
Figure (4.2) scatter plot show an inverse linear relationship of BMI and thyroid hormones assay result using ELISA method; (A) T3, (B) T4 and (C) TSH	76
Figure(4.3)Scatter plot show a linear relationship between	72

thyroid hormones assay results using RIA method & ELISA method (A) T3, (B) T4 and (C) TSH

Abbreviations

<i>RIA</i>	<i>Radioimmunoassay</i>
<i>ELISA</i>	<i>Enzyme Linked ImmunoSorbent Assay</i>
<i>T3</i>	<i>Triiodothyronine</i>
<i>T4</i>	<i>Thyroxin</i>
<i>TSH</i>	<i>Thyroid Stimulating Hormone</i>
<i>BMI</i>	<i>Body Mass Index</i>
<i>QC</i>	<i>Quality Control</i>
<i>STD</i>	<i>Standard</i>
<i>AB</i>	<i>Antibody</i>
<i>Ag</i>	<i>Antigen</i>
<i>RICK</i>	<i>radiation and isotope center in Khartoum</i>