



شبكة المعلومات الجامعية

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



شبكة المعلومات الجامعية
@ ASUNET



شبكة المعلومات الجامعية التوثيق الالكتروني والميكرو فيلم



شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكرو فيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأفلام قد أعدت دون أية تغيرات



يجب أن

تحفظ هذه الأفلام بعيدا عن الغبار

في درجة حرارة من ١٥-٢٥ مئوية ورطوبة نسبية من ٢٠-٤٠%

To be Kept away from Dust in Dry Cool place of
15-25- c and relative humidity 20-40%

بعض الوثائق الأصلية تالفة

بالرسالة صفحات لم ترد بالاصل

STUDY OF RESISTIN LEVEL IN TYPE 2 DIABETIC AND HYPERTENSIVE PATIENTS

**Thesis Submitted for the Fulfillment of Master Degree of Science
(Biochemistry)**

CACE 

574,192

Submitted by

Noha Ibrahim Abdo Mohamed Soliman

B.Sc. (Chemistry-Botany) 2000

Faculty of Science

Cairo University

2009

APPROVAL SHEET FOR SUBMISSION

Title of the M.Sc. Thesis:

**STUDY OF RESISTIN LEVEL IN
TYPE 2 DIABETIC AND HYPERTENSIVE PATIENTS**

Name of candidate: **Noha Ibrahim Abdo Mohamed Soliman**

The thesis has been approved for submission by the supervisors:

1-Prof. Dr. Sanaa Osman Abd-Alaa.

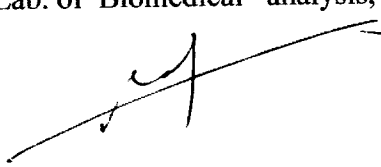
Prof. of Organic Chemistry, Faculty of Science, Cairo University.

Signature:

2- Dr. Mohamed Ali Mohamed El-Desouky.

Lecturer of Biochemistry, Lab. of Biomedical analysis, Faculty of Science, Cairo University.

Signature:



3- Dr. Ibrahim Ali Emara.

Assistant prof. of Biochemistry, National Institute of Diabetes and Endocrinology.

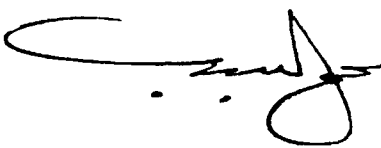
Signature:



Prof. Dr. Mohamed Shokry

Chairman of Chemistry Department
Faculty of Science, Cairo University

Signature:



ABSTRACT

Name of candidate: Noha Ibrahim Abdo Mohamed Soliman

Title of Thesis: **STUDY OF RESISTIN LEVEL IN TYPE 2 DIABETIC AND HYPERTENSIVE PATIENTS**

Degree: M.Sc. of Science Thesis, Faculty of Science, Cairo University, 2009.

This work has been carried out to evaluate the association between hyperresistinemia and the coexistence of hypertension and type 2 diabetes mellitus.

Key words: Diabetes Mellitus, Hypertension, Obesity, Resistin.

Supervisors:

1-Prof. Dr. Sanaa Osman Abd-Alaa.

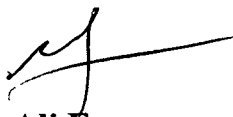
Prof. of Organic Chemistry, Faculty of Science, Cairo University.

Signature:

2- Dr. Mohamed Ali Mohamed El-Desouky.

Lecturer of Biochemistry, Lab. of Biomedical analysis, Faculty of Science, Cairo university.

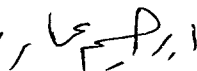
Signature:



3- Dr. Ibrahim Ali Emara.

Assistant prof. of Biochemistry, National Institute of Diabetes and Endocrinology.

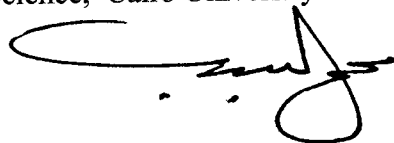
Signature:



Prof. Dr. Mohamed Shokry

Chairman of Chemistry Department
Faculty of Science, Cairo University

Signature:



Statement

Beside the work carried out in this thesis, the candidate has attended and successfully passed a final examination of M.Sc. Courses during the academic year 2004-2005 in Biochemistry covering the following topics:

- | | |
|----------------------|-----------------------------|
| 1- Biochemistry I | 12- Biological Analysis |
| 2- Enzymology | 13- Tissue Culture |
| 3- Molecular Biology | 14- Microbiology |
| 4- Cytology | 15- Industrial Microbiology |
| 5- Toxicology | 16- Spectroscopy |
| 6- Animal Physiology | 17- Stereochemistry |
| 7- Body Fluids | 18- Biochemistry II |
| 8- Immunology | 19- Inorganic Complex |
| 9- Immunochemistry | 20- Mathematics |
| 10- Radiobiology | 21- Physiology |
| 11- German language | |

Prof. Dr. Mohamed Shokry
Chairman of Chemistry Department
Faculty of Science, Cairo University

Signature: 

ACKNOWLEDGEMENT

All praise and greatest thanks be to almighty ALLAH and my Mother, for helping me to complete this and every work.

I wish to express my sincere gratitude to Prof. Dr. **Sanaa Osman Abd-Alaa**, Professor of Organic Chemistry, Faculty of Science, Cairo University, for his supervision, and helpful facilitations.

I also wish to express my deepest gratitude and my great respect to **Dr. Mohamed Ali El-Desouky**, Lecturer of Biochemistry, Faculty of Science, Cairo University.

I am grateful to him my deepest thanks and appreciation for his unlimited assistance, continuous support and meticulous supervision throughout the work. On the other hand, I am grateful to his pouring science and dynamic way of teaching which impressed and benefited me very much.

I owe special thanks to **Dr. Ibrahim Ali Emara**, Assistant prof. of Biochemistry, National Institute of Diabetes and Endocrinology, for his support during this work.

LIST OF CONTENTS

SUBJECT	Page
INTRODUCTION AND AIM OF THE WORK	1
REVIEW OF LITERATURE	6
SUBJECTS, MATERIALS AND METHODS	48
RESULTS	61
DISCUSSION	82
SUMMARY AND CONCLUSION	90
REFERENCES	94
ARABIC SUMMARY	

LIST OF TABLES

No	Table	Page
1	Effects of hormones and cytokines on the level of resistin expression and secretion.	47
2	BMI [kg/m²] in control and studied groups.	62
3	Systolic blood pressure [mmHg] in control and studied groups.	64
4	Diastolic blood pressure [mmHg] in control and studied groups.	66
5	HbA1c [%] in control and studied groups.	68
6	Cholesterol [mg/dl] in control and studied groups.	70
7	Triacylglycerol [mg/dl] in control and studied groups.	72
8	HDL [mg/dl] in control and studied groups.	74
9	LDL [mg/dl] in control and studied groups.	76
10	CRP [mg/dl] in control and studied groups.	78
11	Resistin [ng/ml] in control and studied groups.	80

LIST OF FIGURES

No	Figure	Page
1	Pathogenesis of type 2 diabetes mellitus (stage 1).	9
2	Pathogenesis of type 2 diabetes mellitus (stage 2).	10
3	Pathogenesis of type 2 diabetes mellitus (stage 3).	11
4	Representation of the natural history of untreated essential hypertension	26
5	Pathophysiologic mechanisms of hypertension.	28
6	Endocrine function of white adipose tissue.	36
7	Adipokines as molecular links between obesity and disease.	37
8	An adipocyte-derived cytokine, causes insulin resistance and glucose intolerance in mice.	39
9	Resistin human gene.	41
10	Ribbon diagram representations of Resistin.	42
11	The Standard Curve of Resistin	60
12	Mean and standard deviation of BMI (Kg/m^2) in control and studied groups.	62
13	Mean and standard deviation of systolic blood pressure (mmHg) in control and studied groups.	64
14	Mean and standard deviation of diastolic blood pressure (mmHg) in control and studied groups.	66
15	Mean and standard deviation of HbA1c [%] in control and studied groups.	68

16	Mean and standard deviation of cholesterol [mg/dl] in control and studied groups.	70
17	Mean and standard deviation of Triacylglycerol [mg/dl] in control and studied groups.	72
18	Mean and standard deviation of HDL [mg/dl] in control and studied groups.	74
19	Mean and standard deviation of LDL [mg/dl] in control and studied groups.	76
20	Mean and standard deviation of CRP [mg/dl] in control and studied groups.	78
21	Mean and standard deviation of Resistin [ng/ml] in control and studied groups.	80
22	Resistin VS BMI in diabetic group.	81

LIST OF ABBREVIATIONS

BMI	Body mass index
CRP	C. Reactive protein
HBAIC	Glycosylated hemoglobin
DNA	Deoxyribonucleic acid
HDL	High density lipoprotein
LDL	Low density lipoprotein
IL	Inter leuken
EST	Expressed sequence tag
INF	Tuner necroses Factor
ASP	Acylation stimulating protein
PAI-1	Plasminogen activator inhibitor type 1
RBP-4	Retinol binding protein -4
WAT	White adipose tissue
RELM	Resistin like molecule
FIZZ	Found in inflammatory zone
mRNA	Messenger ribonucleic acid
PCR	Polymerase chain reaction
CE	Cholesterol esterase