Study of Lipoprotein Phospholipase A2 In Metabolic Syndrome

Thesis

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By

Hala Esmail Salem
M.B. B.Ch

Superwised by

Prof. Dr. Mohamed Hesham Elgayar
Professor of Internal Medicine & Endocrinology
Faculty of Medicine-Ain Shams University

Dr. Manal Mohammad Abu-Shady
Lecturer of Internal Medicine& Endocrinology
Faculty of Medicine-Ain Shams University

Dr. Mona Mohammad Abdelsalam
Lecturer of Internal Medicine& Endocrinology
Faculty of Medicine-Ain Shams University

Faculty of Medicine
Ain shams University
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دراسة انزيم ليبوبروتين فوسفوليباز A2 فى المتلازمة الايضية

رساله

توطئه للحصول على درجة الماجستير فى امراض الغدد الصماء

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هاله اسماعيل سالم

بكالوريوس الطب و الجراحه

تحت اشراف

الاستاذ الدكتور/محمد هشام الجيار

استاذ الباطنه و الغدد الصماء

كليه الطب- جامعه عين شمس

دكتورة/منال محمد ابوشادى

مدرس الباطنه و الغدد الصماء

كليه الطب- جامعه عين شمس

دكتورة/منى محمد عبدالسلام

مدرس الباطنه و الغدد الصماء

كليه الطب- جامعه عين شمس

كليه الطب- جامعه عين شمس

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List of abbreviations

APO	Apolipoprotein
ABCA1	ATP binding cassette A1 transporter
ACE	Angiotensin converting enzyme
AGT	Angiotensinogen
ATP III	National Cholesterol Education Program Adult Treatment Panel III
BMI	Body-mass index
BP	Blood pressure
C	Complement
CARE	Cholesterol And Recurrent Events
CE	Cholesteryl ester
CETP	Cholesteryl Ester Transfer Protein
CHD	Coronary Heart Disease
CRP	C-reactive protein
CVD	Cardiovascular disease
DAG	Diacylglycerol
DECODE	Diabetes Epidemiology: Collaborative Analysis Of Diagnostic Criteria in Europe
FATP1	Fatty Acid Transport Protein 1
FFA	Free fatty acids
GLUT	Glucose transporter
HDL	High density lipoprotein cholesterol

List of abbreviations

HL	hepatic lipase
HMG-CoA	3-hydroxy-3-methylglutaryl-coenzyme A
HOMA-IR	Homeostasis model assessment insulin resistance
HR	Hazard Ratio
IDF	International Diabetes Federation
IGF-1	Insulin growth like factor 1
IL-1	Interleukin-1
IL-6	Interleukin 6
IRS	Insulin receptor substrate
JNK1	Jun-amino terminal Kinase
LDL	Low density lipoprotein cholesterol
LPL	Lipoprotein lipase
Lp-PLA_2	Lipoprotein-associated phospholipase A_2
LRH-1	Liver receptor homolog-1
LRH-RE	LRH-1-responsive element
LysoPC	Lysophosphatidylcholine
MI	Myocardial infraction
ML	Milliliter
MS	Metabolic Syndrome
NASH	Non-alcoholic Steatohepatitis
NEFA	Non esterified fatty acid
NHANESIII	The third national health and nutrition examination survey

List of abbreviations

OSAS	Obstructive Sleep Apnea Syndrome
OxFA	Oxidized fatty acid
OxLDL	Oxidized low density lipoprotein
P	Phosphate
PAF-AH	Platelet-activating factor acetylhydrolase
PAI-1	Plasminogen activator inhibitor-1
PC 1	Prohormone Convertase 1
PCOS	Polycystic ovary syndrome
POMC	Pro-opiomelanocortine
PPAR	Peroxisome proliferators activated receptor
PPRE	peroxisome proliferator-activated receptor response element
SAA	Serum amyloid A
SAP	Serum amyloid P
Ser	Serine
SLE	Systemic lupus erythematosus
SMC	Smooth-muscle cell.
SNS	Sympathetic Nervous System
SOCS-3	Suppression of cytokine signaling-3
SR-BI	Scavenger receptor class B type I
STAT3	Signal Transducer and Activator of Transcription 3
TG	Triglyceride
TNF-α	Tumor necrosis factor alpha

List of abbreviations

Tyr	Tyrosine
TZD	Thiazolidinediones
UCP	Uncoupling protein
VLDL	Very low density lipoproteins
WAT	White Adipose tissue

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Introduction

The metabolic syndrome is a clinical entity consisting of central obesity, dyslipidemia, elevated blood pressure, and hyperglycaemia, and its presence is associated with an increased risk for type II diabetes and cardiovascular disease (CVD). Insulin resistance, obesity, sedentary life, and genetics have all been implicated in its pathogenesis **(Langefeld et al., 2004).**

Aggressive management of the individual components of the syndrome should make it possible to prevent or delay the onset diabetes mellitus, hypertension, and cardiovascular disease. Weight loss improves all aspects mortality of the metabolic syndrome **(National Institutes of Health 2004).**

The significantly higher CRP concentration among men with the metabolic syndrome and its independence as a predictor of both CHD and diabetes risk suggests that CRP could be used in future revisions of the syndrome **(Grundy et al., 2006).**

Lipoprotein phospholipase A2 is a key enzyme involved in the release of arachidonic acid from the cell membrane. Inhibition of it by lipocortins results to a decrease in inflammation, and therefore controls levels of inflammatory mediators and cytotoxic metabolites **(Pinto et al., 2003).**

According to the latest IDF definition (2005), for a person to be defined as having the metabolic syndrome he must have:
Central obesity (waist circumference ≥ 94cm for Europid men and ≥80cm for Europid women, with ethnicity specific values for other groups)