SERUM CONCENTRAIONN OF VISFATIN IN ADULT OBESITY

Thesis

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In Clinical and Chemical pathology

By

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بسم الله الرحمن الرحيم

قَالُوا سُبْحَانكَ لاَ علِمَ لَنَا إِلاّ مَا
عَلّمْتَنَا إِنَّكَ أَنتَ الْعَلِيمُ الْحَكِيمُ

صدق الله العظيم

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Amira Mahmoud Gabr

List of Contents

List of Tables

List of Figures

List of Abbreviations

11b-HSD	11b-hydroxysteroid dehydrogenase
Akt	Members of protein kinase B
ALI	Acute lung injury
AMPK	5`adenosine monophosphate-activated protein kinase
ARDS	Acute respiratory distress syndrome
BAL	Branchoalveolar lavage
BAT	Brown adipose tissue
BMI	Body Mass Index
C⁄ÆBP	CCAAT-enhancer-binding protein
CAD	Coronary artery disease
CCL2	CC-chemokine ligand 2
CCR2	CC-chemokine receptor 2
CETP	Cholesterol ester transfer protein
CK -18	Cytokeratin-18
CKD	Chronic kidney disease
CMKLR1	Chemokine-like receptor 1
CoA	Acyl-coenzyme A
cox-2	Cyclooxygenase
CRP	C-reactive protein
DM	Diabetis mellitus
EDHF	Endothelium derived hyperpolarization factor
eNAMPT	extracellularform
eNOs	Endothelial nitric oxide synthase
ER	Endoplasmic reticulum
ERK1/2	Extracellular signal-regulated kinase-1/2
ET- 1	Endothelin-1
FFA	Free Fatty acid
FGF-2	Fibroblast growth factor-2
FTO	Fat mass and Obesity associated gene
GLUT4	Glucose transporter
GPR120	G protein-coupled receptor
GWA	Genome wide association
HDL	High-density lipoprotein
HNMPA-AM	Hydroxy-2-naphthalenylmethylphosphonic acid tris-acetoxymethyl ester
HOMA-IR	Homeostasis model assessment of insulin resistance (HOMA-IR

HSL	Hormone-sensitive lipase
HUVECs	Human umbilical vein endothelial cell
Ib	is the subject`s weight in pounds
IBD	Inflammatory bowel disease
ICAM-1	Intercellular adhesion molecule-1
IFN-γ	Interferon-gamma (IFN -γ)
IKK	IκB Kinase
IKKB	Inhibitor of kappa light polypeptide gene enhancer kinase beta
IL-6	Interlukin-6
In	is the subject height in inches
Inampt	Intracellular form ofNAMPT
iNOS	inducible nitric oxide synthase
INSIG2	Insulin –induced gene2
IR	Insulin resistance
IRAK3	Interleukin-1Receptor-associated kinase-3
IRF3	Interferon Regulatory Factor 3
IRS1/2	Receptor substrate-1/2
JNK	Jun N-terminal kinase
KLF4	Krüppel-like factor 4
LDL	Low Denisty Lipoprotien
LITAF	Lipopolysaccharides (LPS)-induced TNF-á factor (LITAF
LPL	Lipoprotein lipase
LPS	Lipopolysaccharides (LPS)-
MAPK	Mitogen-active Protein kinase
MC4R	Melanocortine-4receptor gene
MCP-1	Monocyte chemotactic protein (MCP)-1
MHC	Major histocompitabelity complex
MIP	Macrophage inflammatory protein (MIP)
MMP-9	Matrix metalloproteinase- 9
MPT	Mitochondrial permeability transition
MS	Metabolic syndrome
MYD88	Myeloid differentiation primary response protein
NAD	Nictinamide adenine dinuclutide
NAFLD	The term non-alcoholic fatty liver disease
NAMPT	Nicotinamide phosphoribosyltransferase
NAPRTase	NAPRTase (nicotinic acid phosphoribosyltransferase
NASH	non-alcoholic steatohepatitis
NEFA	Non Esterified fatty acid

NFkB	Nucluer factor of activated B- cell
NMN	Nicotinamied mononucleotide
Nmnat	Nicotinic acid mononucleotide adenylyltransferase
NO	Nitric oxide
OLETF	Otsuka Long-Evans Tokushima Fatty
OPN	Osteopontin
OSA	Obstructive sleep apnea
ox-LDL	Oxidized LDL
PAI-1	Plasminogen activated inhibitor
PARP	poly (ADP-ribose) polymerase
PBEF	Pre-B cell colony-enhancing factor
PCR	Quantitative real time
PDK- 1	Phosphoinositide-dependent kinase 1
PGE2	Prostaglandin E2,
PI-3K	Phosphoinositide 3-kinase
PKC-è	Protein kinase theta
PPAR	Peroxisome proliferator-activated receptor
PPARs	Peroxisome proliferator-activated receptors
PRPP	PRPP (phosphoribosylpyrophosphate
QAPRTase	QAPRTase (quinolinic acid phosphoribosyltransferase
RA	Rheumatoid arthritis
ROS	Reactive oxygen species
SAA	Serum amyloid A
SIRT1 gene	Sirtuin; silent information regulator gene
SLE	Systemic lupus erythematosus
SNPs	Single nucleotide polymorphisms
SOD2	Superoxide dismutase-2
STAT6	Signal transducer and activator of transcription 6
T1DM	Type 1 diabetes mellitus
TAG	Triacylglycerol
TG	Triglyceride
TGF	Transforming growth factor
Th17	T helper 17
THP-1	The human acute monocytic leukemia cell line
TLR-2	Toll-like receptors 2 and 4
TNF-á	Tumor Necrosis Factor-á
TNFAIP3	Tumor Necrosis Factor, alph-induced protein3
TRAF6	TNF receptor associated factor
Treg	T regulatory cells
TZDS	Thiazolidinediones

VAT	Visceral adipose tissue
VCAM-1	Vascular cell adhesion molecule-1
VLDL	Very low-density lipoprotein
W/H ratio	Waist—hip ratio
WAT	White adipose tissue
WC	The waist circumference
WD	“western” diet

Controls raw data

NO	Age	sex	Wight kg	Hight cm	BMI kg /m^2	TC mg /dl	TG mg /dl	WC cm	HP cm	FBS mg /dl	Insulin uIU/mL	HOMA-IR	Visfatin ng/mL
1	19	f	64	163	24	145	85	79	90	82	17	3.4	5
2	24	m	77	180	23	170	38	89	96	110	4	1.08	0.1
3	18	m	63	176	20.4	142	40	90	102	112	3	0.8	35
4	25	f	62	165	22.8	180	87	81	100	76	7.5	1.4	0.6
5	30	m	80.5	185	23.5	130	70	98	106	105	17.5	4.5	0.4
6	27	f	57	158	22.9	145	120	83	99	91	5	1.1	1.5
7	35	f	64	166	23	142	110	78	92	84	6	1.2	25
8	33	f	62	160	24.2	162	43	73	81	72	12.5	2.2	4
9	25	f	63	165	23	165	145	83	104	102	25	6.3	0.6
10	23	f	62	159	24.5	182	102	75	86	97	13	3.1	25
11	42	m	82	186	23.7	190	141	104	115	94	5	1.1	33
12	33	f	57	156	23.4	142	87	81	102	70	3	0.5	2.6
13	24	m	70	171	23.9	160	92	79	100	74	25	4.6	1.8
14	36	m	62	158	24.9	175	91	84	88	83	30	6.2	25
15	26	m	69	170	23.8	167	104	86	95	90	30	6.6	0.6
16	42	m	75.5	174	24.9	173	133	80	91	120	5	1.4	5
17	39	f	80	182	24.1	181	98	88	100	103	7	1.8	2.5
18	31	m	83	186	24	184	131	98	105	84	7	1.5	7
19	29	m	64	169	22.4	135	83	81	98	96	6	1.4	5.5
20	22	f	59	163	22.2	162	94	83	101	91	6	1.3	32
21	24	m	79	190	21.8	173	101	100	106	92	7	1.7	0.7

Introduction

Obesity is a steady increasing health problem that is defined as increased mass of adipose tissue. It causes complication such as, diabetes mellitus, hypertension, stroke, coronary heart disease and cardiomyopathy ***(AL-Hazimi, 2004).***

For long time, white adipose tissue (WAT) has been regarded as an inert tissue for energy storage. With the rapaidly rising incidiance of the componants of the metabolic syndrome-obesity, diabetes mellitus type2 and hypertantion; these diseases have attracted increasing attention in research and health politics in the industrialized world. In parallel, WAT was recognized as an active endocrine and paracrine organ that play an important role in the metabolic syndrome. ***(Matter and Handschin, 2005)***

Adipose tissue release a lot of adipokines such as interleukin 6 (IL-6), leptin, and resistin. A new adipokine, visfatin, has been described over the past few years. This adipokine corresponde to protein identified previously as pre-B-cell colony enhanced factor, a cytokine expressed in lymphocyte ***(Varma et al., 2006).***

Visfatin is highly , but not exclusively expressed in visceral fat mass, promote adipogenesis, and has insulin-mimetic properties; however, its role in human physiology remain largely unknoun ***(Arner, 2006).***

Aim of the Work

The aim of the present study was to assess serum visfatin level as well as its relation to selected anthropometric and biochemical parameters in adult obesity.