Potential utility of single and concurrent administration of a partial peroxisome proliferator activated receptor-γ agonist and a protein tyrosine phosphatase inhibitor in treating type II diabetic rats

A thesis submitted for the partial fulfillment of Master's degree in Pharmaceutical Sciences (Pharmacology and Toxicology)

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- Instrumental Analysis
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- Computer skills
- Statistics

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- Chemotherapy
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- Neuropharmacology
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Acknowledgement

First and foremost, Thanks are due to Allah. At the end of my thesis, it is a pleasant task to express my thanks to all those who contributed in many ways to the success of this study and made it an unforgettable experience for me.

At this moment of accomplishment, I would like to express my sincere gratitude to my supervisor Prof. Amani Kahlifa who has supported me throughout my thesis with her patience and knowledge whilst allowing me the room to work in my own way.

I am also extremely indebted to my supervisor Prof. Alaaeldin Elkoussi whose help, stimulating suggestions and encouragement, helped me in all the time of research and in writing of this thesis.

I would also like to thank Dr. Mona Schaalan for her continuous support of my master's study and research, for her patience, motivation, enthusiasm and immense knowledge. I could not have imagined having better supervisors for my master's study.

Besides my supervisors, I gratefully acknowledge Prof. Moushira Ibrahim for her encouragement and personal attention. My thanks are due to her valuable suggestions and constant support throughout my master's journey.

Lastly, and most importantly I wish to thank my entire family for providing a loving environment for me. I wish to thank my parents-in-law for supporting me throughout this phase of life and for helping me in the successful completion of this thesis. Special thanks to my parents, they raised me, supported me, taught me and loved me. Special thanks to my father for his sincere encouragement and supporting me spiritually throughout my life.

Finally, I wish to dedicate this thesis to my late mother, she taught me to persevere and prepared me to face challenges with faith and humility. She was a constant source of inspiration to my life. Although she is not here to give me strength and support, I always feel her presence that used to urge me to strive to achieve my goals in life. I wish her soul roots in peace and solace in the heaven.

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List of Abbreviations

ACC	Acetyl coenzyme-A carboxylase
ACE	Angiotensin-converting enzyme
AdipoR	Adiponectin receptor
ADP	Adenosine diphosphate
AGEs	Advanced glycation end products
AMP	Adenosine monophosphate
AMPK	Adenosine monophosphate activated protein kinase
ANOVA	Analysis of variance
Ang II	Angiotensin II
apoB	Apolipoprotein B
AR	Androgen receptor
AT1	Angiotensin II-type1 receptor
AT2	Angiotensin II-type 2 receptor
ATM	Ataxia telangiectasia mutated gene
ATP	Adenosine triphosphate
AUC	Area under curve
BSA	Bovine serum albumin
CAP	Cbl associated protein
Cbl	Casitas B-lineage lymphoma
CD36	Cluster of differentiation 36
CE	Cholesterol esterase
COx	Cholesterol oxidase
CPT-1	Carnitine palmitoyltransferase-1
CVD	Cardiovascular disease
DAG	Diacyl glycerol
DAP	Dihydroxyacetone phosphate
DIR	Diabetic/Insulin-resistant
DM	Diabetes mellitus
DTNB	5,5'- dithiobis-2-nitrobenzoic acid
EARPG	European Arterial Risk Policy Group
EDTA	Ethylene diamine tetra acetic acid
ELISA	Enzyme-linked immunosorbent assay
eNOS	Endothelial nitric oxide synthase
FAS	Fatty acid synthase
FCPD	Fibrocalculous pancreatic diabetes
FFA	Free fatty acids
FTO	fat mass– and obesity-associated gene
G-3-P	Glyerol-3-phosphate
G6P	Glucose-6-phosphate
G6Pase	Glucose-6-phosphatase
G6PDH	Glucose-6-phosphate-dehydrogenase
GAD	Glutamic acid decarboxylase
GDM	Gestational diabetes mellitus
GIGT	Gestational impaired glucose tolerance
GK	Glycerol kinase
GLUT	Glucose transporter

GO	Glucose oxidase
GPO	Glycerylphosphate oxidase
GPx	Glutathione peroxidase
GSH	Reduced glutathione
H_2O_2	Hydrogen peroxide
HDL	High density lipoprotein
HFD	High-fat diet
HFFD	High-fat, high-fructose diet
HK	Hexokinase
HMG-CoA	3-hydroxy-3-methyl-glutaryl-Coenzyme A
HOMA	Homeostasis model assessment
HPLC	High performance liquid chromatography
HRP	Horseradish peroxidase
IDDM	Insulin-dependent diabetes mellitus
IFG	Impaired fasting glycemia
IgG	Immunoglobulin G
IGT	Impaired glucose tolerance
IL-6	Interleukin-6
iNOS	Inducible nitric oxide synthase
i.p.	Intra-peritoneal
IR	Insulin resistance
IRS	Insulin receptor substrate
IV	Intravenous
LDL	Low density lipoprotein
LSD	Least significant difference
MCP-1	Monocyte chemotactic protein-1
MTP	Microsomal triglyceride transfer protein
MRDM	Malnutrition-related diabetes mellitus
mRNA	Messenger RNA
NADH	Nicotinamide adenine dinucleotide
NCEP	National Cholesterol Education Program
NEFA	Non-esterified fatty acids
NF-KB	Nuclear factor-kappa B
NIDDM	Non-insulin-dependent diabetes mellitus
NO	Nitric oxide
NPD	Normal pellet diet
NSB	Non-specific binding
OCT	Organic cation transporter
OD	Optical density
OGTT	Oral glucose tolerance test
PAI-1	Plasminogen activator inhibitor-1
PBS	Phosphate buffered saline
PCOS	Polycystic ovary syndrome
PDH	Pyruvate dehydrogenase
PDK	Phosphoinositide dependent kinase
PDPD	Protein–deficient pancreatic diabetes
PEG	Polyethylene glycol
PEPCK	Phosphoenol pyruvate carboxykinase
PFK	Phosphofructokinase
p-HBS	p-hydroxybenzene sulfonate

PI3K	Phosphatidyl-inositol 3-kinase
PIP2	Phosphatidyl-inositol-3,4-biphosphate
PIP3	Phosphatidyl-inositol-3,4,5-triphosphate
PKA	Protein kinase A
PKB	Protein kinase B
PKC	Protein kinase C
PO	Peroxidase
p.o.	Per Os (oral)
PPAR	Peroxisome-proliferator activated receptor
PPRE	PPAR responsive elements
PTP	Protein tyrosine phosphatase
RAGE	Receptor for advanced glycation end products
RAS	Renin-angiotensin system
RIA	Radioimmunoassay
ROS	Reactive oxygen species
rpm	Round per minute
RXR	Retinoid X receptor
S.E.M.	Standard error of the mean
SHBG	Sex hormone–binding globulin
SOD	Superoxide dismutase
SNP	Single nucleotide polymorphism
SRE	Sterol responsive elements
SREBP	Sterol regulatory element binding protein
STZ	Streptozotocin
T1DM	Type 1 diabetes mellitus
T2DM	Type 2 diabetes mellitus
TG	Triglycerides
TMB	3, 3', 5, 5'-Tetramethyl benzidine
TNF-α	Tumor necrosis factor alpha
TZD	Thiazolidinedione
UCP	Uncoupling proteins
VLDL	Very low density lipoprotein
WAT	White adipose tissue
WHO	World Health Organization

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