



Effect of *Pleurotus Ostreatus* on the endothelial dysfunction in ovariectomized- diabetic rats.

A Thesis

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Presented by

Heba Hassan Metwaly Hassan

(B.Sc. in Biochemistry – Faculty of Science, Ain Shams University, 2011)

Under Supervision of

Prof. Dr. Shadia Abdal Hameed Fathy
Professor of Biochemistry
Department of Biochemistry
Faculty of Science, Ain Shams University

Prof. Dr. Mehrevan Mustafa Abdal Moneim
Professor of Medical Biochemistry
Department of Medical Biochemistry
National Research Center

Dr. Magda Kamal Ezz

Assistant Professor of Biochemistry
Department of Biochemistry
Faculty of Science, Ain Shams University

Department of Biochemistry Faculty of science

Ain Shams University

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Name: Heba Hassan Metwaly Hassan.

Date of graduation: June 2011, Faculty of Science,

Biochemistry Department,

Ain Shams University.

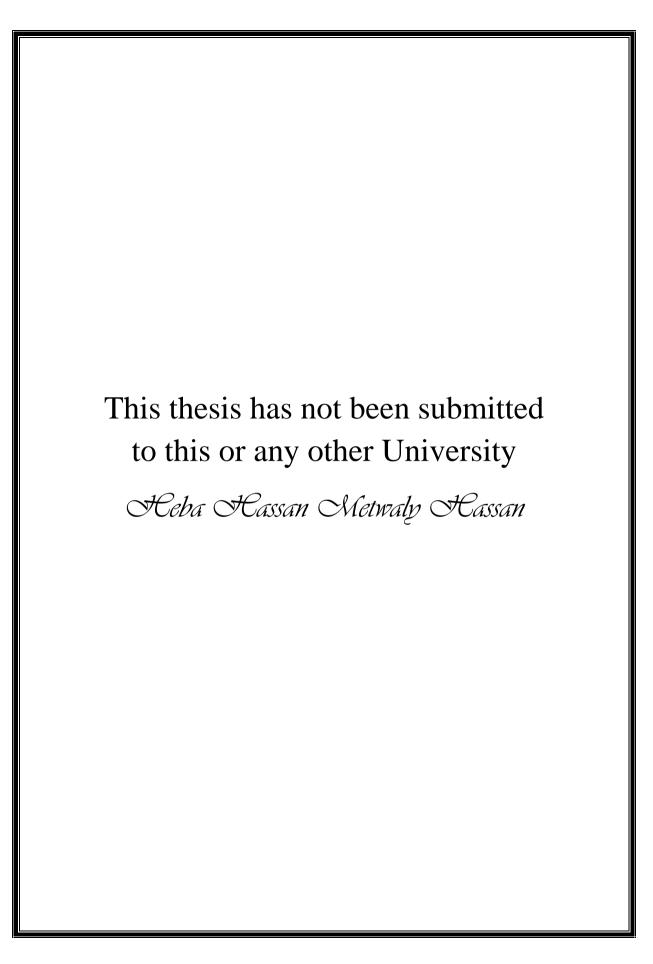
Degree awarded: B.Sc. in Biochemistry 2011

(Excellent with honor degree).

Occupation: Specialist at Medical Biochemistry

Department, Medical Research

Division, National Research Centre.



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List of abbreviations

Abbreviations	Description
ADMA	Asymetric Dimethylargnine
AGE	Advanced Glycation End Products
Ang II	Angiotensin II
ATP	Adenosine Triphosphate
BH2	Dihydrobiopterin
BH4	Tetrahydrobiopterin
cAMP	Cyclic Adenosine Monophosphate
cGMP	Cyclic Guanosine Monophosphate
DDAH	Dimethylarginine Dimethylaminohydrolase
E2	Estrogen
ECs	Endothelial Cells
eNOS	Endothelial Nitric Oxide Synthase
ER	Estrogen Reseptor
ET	Endothelin
FFAs	Free Fatty Acids
GTP	Guanosine Triphosphate
HDL-C	High Density Lipoprotein – Cholesterol
HMG-CoA	3- Hydroxy-3-Methylglutaryl-CoA
HPLC	High Performance Liquid Chromatography
HRP	Horseradish Peroxidase
HRT	Hormone Replacement Therapy
HTGL	Hepatic Triglyceride Lipase
ICAM-1	Intercellular Adhesion Molecule-1
IL	Interleukins
iNOS	Inducible Nitric Oxide Synthase
IR	Insulin Resistance
LCAT	Lecithin: Cholesterol Acyltransferase
LDL-C	Low Density Lipoproteins-Cholesterol
NAD	Nicotinamide Adenine Dinucleotide
NADPH	Nicotinamide Adenosine Dinucleotide
	Phosphate
NF-к β	Nuclear Factor Kappa β
nNOS	Neuronal Nitric Oxide Synthase

NO	Nitric Oxide
NOS	Nitric Oxide Synthase
NOx	Nitrite/ Nitrate
O_2 •	Superoxide Anion
OD	Optical Density
ОН	Hydroxyl Radical
OPA	O-Phthaldialdehyde
OVX	Ovariectomized
PAI-1	Plasminogen Activator Inhibitor Type 1
PKA	Protein Kinase A
PKC	Protein Kinase C
PKG	Protein Kinase G
PON	Paraoxonase
ROS	Reactive Oxygen Species
SAM	S-Adenosylmethionine
SMC	Smooth Muscle Cell
5-SSA	5-Sulfosalicylic Acid
STZ	Streptozotocin
TAG	Triacylglycerol
TF	Tissue Factor
THF	Tetrahydrofuran
TNF-α	Tumor Necrosis Factor Alpha
t-PA	Tissue Plasminogen Activator
VCAM-1	Vascular Cell Adhesion Molecule-1
VECs	Vascular Endothelial Cells
VLDL	Very Low Density Lipoproteins

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Abstract

The present study was designed to evaluate the Effect of Ostreatus on the endothelial dysfunction ovariectomized- diabetic rats. The study was performed on 70 female sprague-dawley rats divided into 7 groups: healthy rats served as control group, healthy rats received orally 100 mg/kg body weight mushroom, healthy rats received orally 200 mg/kg body weight mushroom, sham group, ovariectomized - diabetic rats, treated ovariectomized - diabetic rats received orally 100 mg/kg body weight mushroom, treated ovariectomized diabetic rats received orally 200 mg/kg body weight mushroom. Fourty female rats underwent either sham-surgery or bilateral ovariectomy. Experimental diabetes was induced by single subcutaneous injection of 50mg/kg body weight streptozotocin. After six weeks blood samples were collected for assessment of serum insulin, serum total cholesterol (TC), triacylglycerol (TAG), low density lipoprotein – cholesterol (LDL-C), high lipoprotein-cholesterol (HDL-C) density and serum paraoxonase (PON1), fasting blood sugar (FBS), plasma estrogen and plasma asymmetric dimethylargnine (ADMA) and aorta tissue samples were harvested to determine nitrite and nitrate (NOx) and tissue plasminogen activator (t-PA). Mean levels of TAG, LDL-C, FBS were significantly decreased and HDL-C, insulin, NOx, PON1 and t-PA were significantly increased in treated Ovx - diabetic group received orally 200 mg/kg body weight mushroom compared to treated Ovx - diabetic group received orally 100 mg/kg body weight mushroom. On the other hand no significant difference was observed between the two groups regarding in total cholesterol, estrogen and ADMA.

Conclusion

It has been demonstrated that the *Pleurotus Ostreatus* has favorably effects on serum lipids, improves endothelium-dependent vasodilation, increases antioxidant and estrogen level and decreases intravascular thrombus propagation. These findings have generated proposed mechanisms for *Pleurotus Ostreatus* to improve endothelial dysfunction and protect against the development of atherosclerosis in ovariectomized-streptozotocin rats

