

Molecular and biochemical study of superoxide dismutase in Egyptian patients with type 2 diabetes mellitus

A Thesis

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CONTENTS

	<i>Page</i>
List of Abbreviations	iv
List of Tables	x
List of Figures	xii
Acknowledgment	xv
Abstract	xvii
 Introduction	 1
 Aim of the Work	 4
 Review of Literature	 5
 Diabetes Mellitus	 5
Definition of Diabetes Mellitus.....	5
Classification of Diabetes Mellitus	5
Type 1 Diabetes.....	6
Type 2 Diabetes.....	8
Other specific types of diabetes.....	12
Gestational Diabetes.....	15
Diagnosis of Diabetes Mellitus.....	16
Complications of Diabetes Mellitus.....	17
 Diabetes Mellitus as an Oxidative Stress	 19
Definition of Oxidative Stress	19
Endogenous Production of ROS.....	20
Biomarkers of Oxidative Stress	23
Defense mechanisms against oxidative stress	24
Methods for evaluation of oxidative stress	25
Radial reactions.....	25
Diabetes Mellitus and Oxidative Stress.....	29

CONTENTS (Cont.)

	<i>Page</i>
Superoxide dismutase	34
Cytosolic Cu/Zn-SOD	36
Mitochondrial Mn-SOD	38
Extracellular Cu/Zn-SOD	39
EC-SOD Structure	39
Tissue Distribution of EC-SOD	46
Biological role of EC-SOD	46
Medical applications of EC-SOD	48
EC-SOD and Diabetes Mellitus.....	48
 Subjects and Methods	 51
Laboratory measurements.....	53
Determination of Serum Glucose Concentration.....	53
Quantitative Determination of Glycosylated Hemoglobin A1c.....	55
Determination of Superoxide Dismutase (SOD) Activity in Serum..	59
Determination of Lipid Peroxidation in Serum	61
Quantitative Determination of Erythrocytic Sedimentation Rate.....	64
Determination of Serum CRP Concentration	65
Determination of Serum Cholesterol Concentration	67
Determination of Serum Triglycerides Concentration.....	69
Determination of Serum HDL-C Concentration	71
Determination of Serum Urea Concentration	73
Determination of Serum Creatinine Concentration.....	75
Determination of Serum AST Concentration	77
Determination of Serum ALT Concentration	79
Determination of Serum Albumin Concentration	80
Determination of Serum Total Bilirubin Concentration	82
DNA analysis	85

CONTENTS (Cont.)

	<i>Page</i>
Extraction of genomic DNA from blood	85
Amplification of Arg213Gly EC-SOD Region	87
Detection of the PCR amplification products using gel electrophoresis	91
Restriction genotyping of Arg213Gly EC-SOD amplified sequences.....	96
Statistical Analysis.....	98
Results	100
Discussion	127
Conclusion	140
Recommendations	141
Summary	142
References	146

List Of Abbreviations

4AAP	4-aminoantipyrine
8-OHdG	8-Hydroxy-2-deoxyguanosine
8-OHG	8-Hydroxy-guanine
ADP	Adenosine diphosphate
aEC-SOD	Active extracellular superoxide dismutase
ALT	Alanine aminotransferase
anti-GAD	Anti-glutamic acid decarboxylase
AP-1	Activator protein-1
ARE	Antioxidant response elements
Arg	Arginine amino acid
Arg213Gly	Arginine 213 to Glycine substitution
ASC	Ascorbic acid
Asn	Asparagine amino acid
AST	Aspartate aminotransferase
ATP	Adenosine-5'-triphosphate
BMI	Body mass index
bp	Base pair
C/EBP beta	CCAAT enhancer binding protein-beta
Ca²⁺	Calcium ion
CAT	Catalase enzyme
cDNA	Complementary DNA
CHD	Coronary heart disease

List Of Abbreviations (Cont.)

CHOL	Total cholesterol
CoQ	Coenzyme Q
CRP	C-reactive protein
Cu²⁺	Copper ion
Cu/Zn-SOD	Copper/zinc containing superoxide dismutase
CVD	Cardiovascular disease
Cys	Cysteine amin acid
Cyt C	Cytochrome c
dATP	Deoxyadenosine triphosphate
dCTP	Deoxycytidine triphosphate
DDC	Dietheldithiocarbamate
dGTP	Deoxyguanosine triphosphate
DM	Diabetes mellitus
DNA	Deoxyribonucleic acid
dNTPs	Deoxynucleoside triphosphates
DTT	Dithiothreitol
dTTP	Deoxythymidine triphosphate
ECM	Extracellular matrix
EC-SOD	Extracellular superoxide dismutase
EDTA	Ethylenediaminetetraacetic acid
ESR	Erythrocytic sedimentation rate
ETC	Electron transport chain

List Of Abbreviations (Cont.)

FADH₂	1,5-dihydro-flavin adenine dinucleotide
FBS	Fasting blood glucose
Fe (II)	Iron (II) ion
Fe (III)	Iron (III) ion
Fe-SOD	Iron containing superoxide dismutase
G6PD or G6PDH	Glucose-6-phosphate dehydrogenase
GDM	Gestational diabetes mellitus
GHb	Glycosylated hemoglobin
Glu	Glutamic amino acid
Gly	Glycine amino acid
GOT	Glutamate Oxaloacetate transaminase
GPT	Glutamate pyruvate transaminase
GPX	Glutathione peroxidase
GSH	Glutathione
GSSG	Oxidized glutathione
H₂O	Water molecule
H₂O₂	Hydrogen peroxide
Hb A1c	Glycosylated Hemoglobin A1c
HCl	Hydrochloric acid
HDL-C	High density lipoprotein cholesterol
HNE	4-hydroxynonenal

List Of Abbreviations (Cont.)

HNF	Hepatocyte nuclear factor
HOCl	Hypochlorous acid
IDDM	Insulin-dependent diabetes mellitus
iEC-SOD	Inactive extracellular superoxide dismutase
JNK	C-Jun N-terminal kinases
kDa	Kilo Dalton
KCl	Potassium chloride
LDL	Low density lipoprotein
LDL-C	Low density lipoproteins cholesterol
LMWA	Low molecular weight antioxidants
LPO	Lipid peroxides
Lys	Lysine amino acid
MDA	Malondialdehyde
MgCl₂	Magnesium chloride
Mn-SOD	Manganese containing superoxide dismutase
MODY	Maturity-onset diabetes of the young
MPO	Myeloperoxidase enzyme
mRNA	Messenger RNA
MTS	Mitochondrial targeting sequence
NADH	Reduced nicotinamide adenine dinucleotide
NADH-DH	NADH dehydrogenase
NBT	Nitroblue tetrazolium

List Of Abbreviations (Cont.)

NF-κB	Nuclear factor kappa-light-chain-enhancer of activated B cells
NIDDM	Non-insulin-dependent diabetes mellitus
NO•	Nitric oxide
NOS	Nitric oxide synthase
NOX2	NADPH oxidase 2
O₂	Oxygen molecule
OCl-	Hypochlorite ion
OH•	Hydroxyl radical
ONOO-	Peroxynitrite
PAD	Peripheral arterial disease
PARP	Poly-ADP ribose polymerase
PCR	Polymerase chain reaction
PKC	Protein kinase C
PPS	Postprandial blood glucose
R213G	Arginine 213 to Glycine substitution
RFLP	Restriction fragment length polymorphism
ROS	Reactive oxygen species
S.D.	Standard deviation
S-DH	Succinate dehydrogenase
SOD	Superoxide dismutase
SOD1	Copper/zinc containing superoxide dismutase

List Of Abbreviations (Cont.)

sod1	Copper/zinc containing superoxide dismutase coding gene
SOD2	Manganese containing superoxide dismutase
sod2	Manganese containing superoxide dismutase coding gene
SOD3	Extracellular superoxide dismutase
sod3	Extracellular superoxide dismutase coding gene
SPSS	Statistical Package for the Social Sciences
SSCP	Single-strand conformational polymorphism
T2D	Type 2 diabetes
TAE	Tris-acetate-EDTA buffer
TBA	Thiobarbituric acid
TBARS	Thiobarbituric acid-reactive substances
TCA	Trichloroacetic acid
TG	Triglycerides
Trp	Tryptophan amino acid
VLDL	Very low density lipoproteins
WHO	World health organization
Zn²⁺	Zinc ion

List of Tables

<i>Table</i>	<i>Title</i>	<i>Page</i>
(1)	Classification of diabetes mellitus.	6
(2)	The conversion of Glycosylated Hemoglobin A1 (GHbA1) to Glycosylated Hemoglobin A1c (HbA1c) and to the Mean Blood Glucose level (MBG).	58
(3)	Polymerase chain reaction set up.	90
(4)	Cycling Conditions of PCR.	91
(5)	Statistical analysis of blood sugar levels and HbA1c between diabetic group and normal control group.	102
(6)	Statistical analysis of total SOD activity& MDA level between diabetic group and normal control group.	104
(7)	Statistical analysis of ESR and CRP levels between diabetic group and normal control group.	106
(8)	Statistical analysis of serum CHOL, TG, HDL-C& LDL-C levels between diabetic group and normal control group.	108
(9)	Statistical analysis of serum Urea& Creatinine levels between diabetic group and normal control group.	110
(10)	Statistical analysis of serum AST, ALT, Albumin& total Bilirubin levels between diabetic group and normal control group.	112

List of Tables (Cont.)

<i>Table</i>	<i>Subject</i>	<i>Page</i>
(11)	Spearman correlation coefficients of SOD and other parameters.variables among active TB group.	115
(12)	Spearman correlation coefficients of MDA and other parameters.	119
(13)	Genotype distribution of the Arg213Gly EC-SOD polymorphic markers in control and patient groups.	126

List of Figures

<i>Figure</i>	<i>Title</i>	<i>Page</i>
(1)	Schematic representation of the mitochondrial electron transport chain (ETC).	21
(2)	Enzymes involved in generation and reduction of ROS.	22
(3)	The antioxidant defense system.	25
(4)	Reduction of oxygen with 4 electrons and 4 protons forming water.	27
(5)	The cell damage induced by reactive oxygen species (ROS).	31
(6)	Proposed link between hyperglycemia and four mechanisms that lead to tissue damage.	33
(7)	Schematic representation of the 3 human superoxide dismutase (SOD) genes.	36
(8)	Schematic diagram of the human EC-SOD gene.	41
(9)	EC-SOD protein structure.	42
(10)	Heparin binding affinity patterns of EC-SOD.	44
(11)	Disulfide connectivity of active and inactive EC-SOD.	45
(12)	Biologic functions of EC-SOD. EC-SOD scavenges superoxide anion, which limits oxidative stress and preserves nitric oxide bioavailability.	47
(13)	Schematic diagram illustrating the predicted effect of EC-SOD glycation on vascular disease in diabetics.	50

List of Figures (Cont.)

<i>Figure</i>	<i>Title</i>	<i>Page</i>
(14)	MDA-TBA Adduct.	61
(15)	Standard curve of MDA.	63
(16)	Mean of FBS, PPS and HbA1c in control and diabetic groups.	103
(17)	Mean of SOD and MDA in control and diabetic groups.	105
(18)	Mean of ESR and CRP in control and diabetic groups.	107
(19)	Mean of total cholesterol, TG, HDL-C and LDL-C in control and diabetic groups.	109
(20)	Mean of Urea and Creatinine in control and diabetic groups.	111
(21)	Mean of AST, ALT, albumin and total bilirubin in control and diabetic groups.	113
(22)	Relation between SOD and MDA.	116
(23)	Relation between SOD and ESR.	116
(24)	Relation between SOD and total cholesterol.	117
(25)	Relation between SOD and TG.	117
(26)	Relation between SOD and LDL-C.	118
(27)	Relation between MDA and SOD.	120
(28)	Relation between MDA and ESR.	120
(29)	Relation between MDA and total cholesterol.	121
(30)	Relation between MDA and TG.	121
(31)	Relation between MDA and LDL-C.	122

List of Figures (Cont.)

<i>Figure</i>	<i>Title</i>	<i>Page</i>
(32)	Agarose (1.5%) gel electrophoresis showing genomic DNA. Lane 1: Φ x 174 DNA/ III marker, Lanes: 2-8 different genomic DNA sample.	123
(33)	Analysis of PCR amplification products. The amplified PCR products of different samples were separated on 2% agarose gel. Lane 1: Φ x 174 DNA/ III marker, Lanes: 2-8 different PCR products of 104 bp in size.	124
(34)	Restriction analysis of Arg213Gly polymorphism at the SOD3 gene on 3% agarose gel. Lanes 2-7, samples after digestion with Eco521; lane 5, Arg/Arg genotype; lanes 2,3&7, Arg/Gly genotype; lanes 4&6 Gly/Gly genotype. Lane 1&8: molecular DNA marker ϕ X 174 / Hae III fragments are shown.	125