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

A Thesis

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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 substitusion
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
Ca^{2+}	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
Cu^{2+}	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	Diethеldithiocarbamate
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.)

$FADH_2$	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
H_2O	Water molecule
H_2O_2	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
$MgCl_2$	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
O_2	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 substitusion
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
Zn^{2+}	Zinic ion

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