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Molecular Study Of Apolipoprotein B Gene In Ischemic Heart Diseases And Its Association With Hypercholesterolemia

Thesis
Submitted in partial Fulfillment of Master Degree in Science
(Biochemistry)

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ABSTRACT

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Cardiovascular disease is the most important cause of death in the world today, **Ischemic heart disease includes a wide spectrum of conditions, ranging from silent ischemia and exertion induce angina, through unstable angina to acute myocardial infarction (MI). Coronary artery disease has become a major cause of morbidity and mortality in Egypt Atherosclerosis is a systemic disease with independent rates of occurrence in coronary arteries. This study aims to evaluate the role of apolipoprotein (apo)B gene mutation of all potentially atherogenic lipoproteins, as predictors of Ischemic Heart Diseases (IHD) and its association with other biochemical changes. The results presented revealed the following data: Fasting and postprandial blood glucose was highly significant increase ($p<0.001$) in groups II and III when compared with control group. Also there are significant increase of blood urea level ($P<0.05$) in group II, also; highly significant increase of both blood urea in group III compared to control group. Serum creatinine, urea and BUN were not correlated to the hyperglycemia in all studied groups. The major abnormalities were the highly significant changes ($p <0.001$, 0.01) of triacylglycerol, VLDL-c, LDL-c and total cholesterol in all studied groups compared to control group, while, HLD-c was significantly decrease all studied groups compared to control group. There was significant increase of FFA in group one and non significant changes in group II and III compared to control group. Also, no significant changes of phospholipids in all studied groups compared to control group. The percentage of homozygous in groups I, II and III apo B gene was expressed by (73%), (40%), and (86.7%) respectively .The percentage of heterozygous in groups I, II and III apo B gene was expresedby(27%),(60%)and(13.3%) respectively.**

In conclusion: Apo B expression could be a good criterion for characterizing the patients suffering from ischemic heart disease. Farther work is strongly recommended for the possibility of using the previous biochemical parameters for diagnosis, prognosis and therapy for ischemic heart disease.

Key words: Apo B, Ischemia, Heart, Gene, Expression, Hypercholesterolemia .

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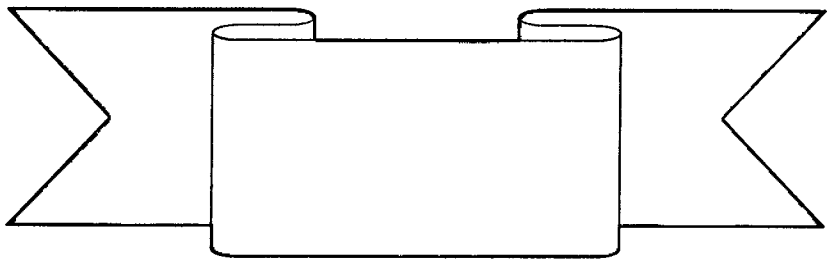
List of abbreviations

a.a	Amino acide
apoA1	Apolipoprotein AI
apoB	Apolipoprotein B
apoCIII	Apolipoprotein CIII
ApoE	Apolipoprotein E
BMI	Body mass index
BUN	Blood urea nitrogen
CAD	coronary artery disease
CETP	Cholesteryl ester transfer protein
CHD	Coronary heart disease
CRP	C-reactive protein
CVD	Cardiovascular disease
DM	Diabetes mellitus
FDB	Familial defective apo B-100
FH	Familial hypercholesterolemia
GK	Glycerol kinase
GPO	Glycerol 3-phosohate oxidase
HDL	High-density lipoprotein
HDL-c	High density lipoprotein cholesterol
HL	Hepatic lipase
HMG-COA	3-Hydroxy-3methyl glutary co enzyme A
Hs-CRP	High sensitivity C- reactive protein
ICAM	Intercellular adhesion molecule
IHD	Ischemic heart disease
IMT	Intimae media thichness
KDa	Kilo Daltons
LCAT	Lecithin cholesterol acyltransferase
LCF	Lipid clearing factor
LDL	Low-density lipoprotein
LDL-c	Low-density lipoprotein cholesterol
LDL-R	Low density lipoprotein receptor
LPR	Lipase receptor
MI	Myocardial infarction
MIT	Microsomal triglyceride transfer protein

NCEP	National Cholesterol Education Program.
NCEPATpIII	the National Cholesterol Education ofThird report
NEFA	Non esterified fatty acids
PAD	Peripheral arterial disease
PAI-1	Plasminogen activator inhibitor-1
PCR	Polymerase chain reaction
TC/HDL	Total cholesterol to HDL cholesterol ratio
TG	Triacylglycerols
TGRLP	Triacylglycerols - rich lipoprotein
TMB	Tetra methyl benzidine
UA	Unstable angina
VCAM-1	Vascular cell adhesion molecule -1
VLDL	Very low density lipoprotein



Introduction