EFFECT OF DIETARY PROTEIN ON LIPID AND CARBOHYDRATE METABOLISM IN EXPERIMENTAL DIABETES

Thesis

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By

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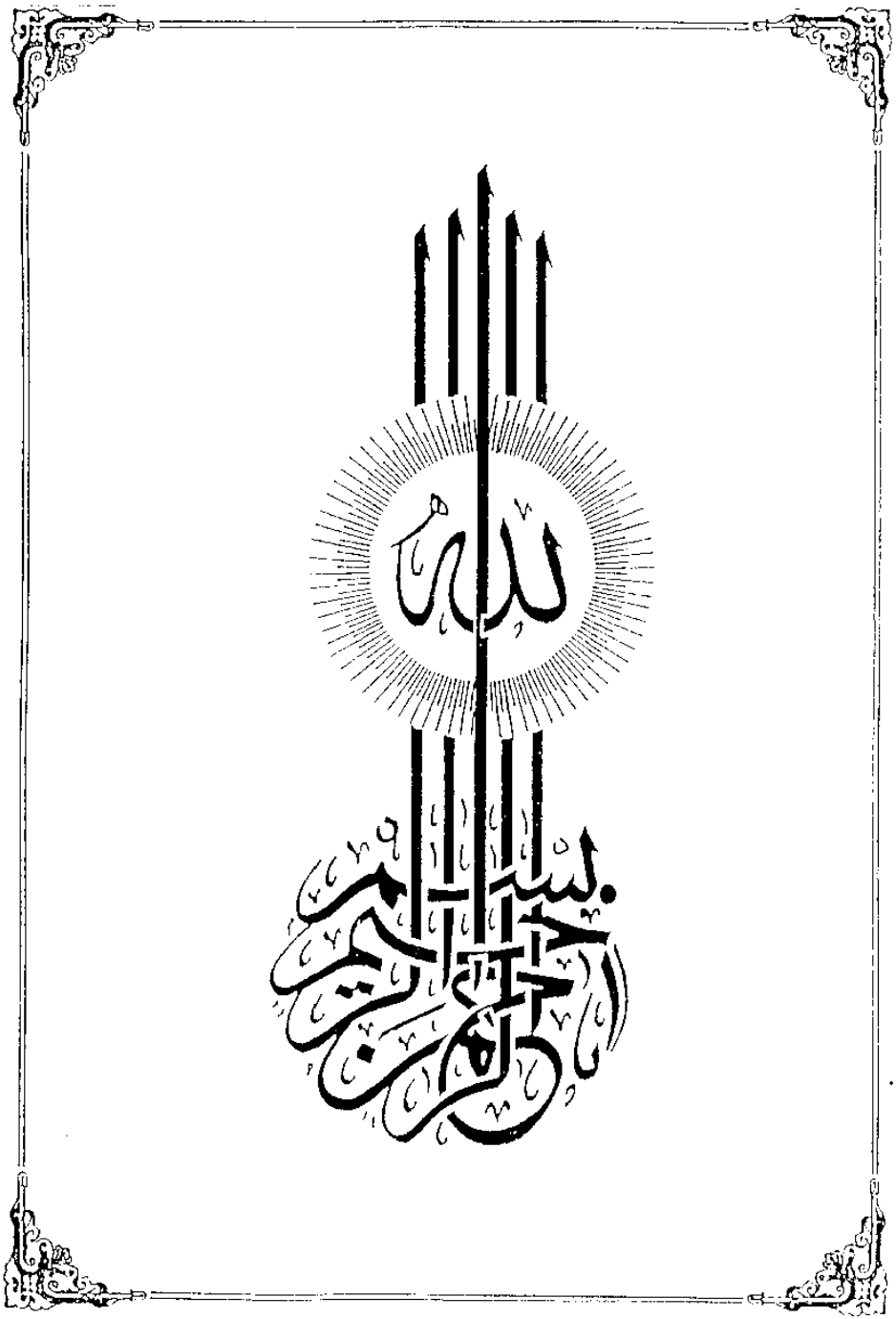

Dedication

I am specially Greatly Indebeted

TO MY PARENTS

AND

MY HUSBAND

ACKNOWLEDGMENT

I would like to express my deep gratitude and indebtedness to **professor Dr. Fawzia Mohamed Refai** Professor of Biochemistry, Biochemistry Department, Faculty of Science, Ain Shams University and **Professor Dr. El-Sayed Mohamed Hegazy,** Head of Food Science and Nutrition Department, National Research Centre of their tutorial guidance and active supervision in addition to suggesting the problem and effort throughout the course of the thesis.

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LIST OF ABBREVIATIONS

ACAT:	Acyl-CoA: Cholesterolacyltransferase
AMP:	Adenosine mono-phosphate
ATP:	Adenosine tri-phosphate
BCAA:	Branched Chain amino acids.
GDW:	Gastational diabetic women.
HDL:	High density lipoprotein.
HP:	High protein.
IDM:	Insulin dependent diabetes.
I.P.	Intra peritoneal.
LDL:	Low density lipoprotein.
LP:	Lipoprotein.
ME:	Metabolizable energy.
NEFA:	Non estrified fatty acids.
NIDM:	Non-insulin dependent diabetes mellitus.
NS:	Not significant
PI	Protein intake
SER:	Smooth endoplasmic reticulum
STZ:	Streptozotocin.
T.Ch.:	Total cholesterol.
TG:	Triglycerides
TL	Total lipids.
VLDL:	Very low density lipoprotein.

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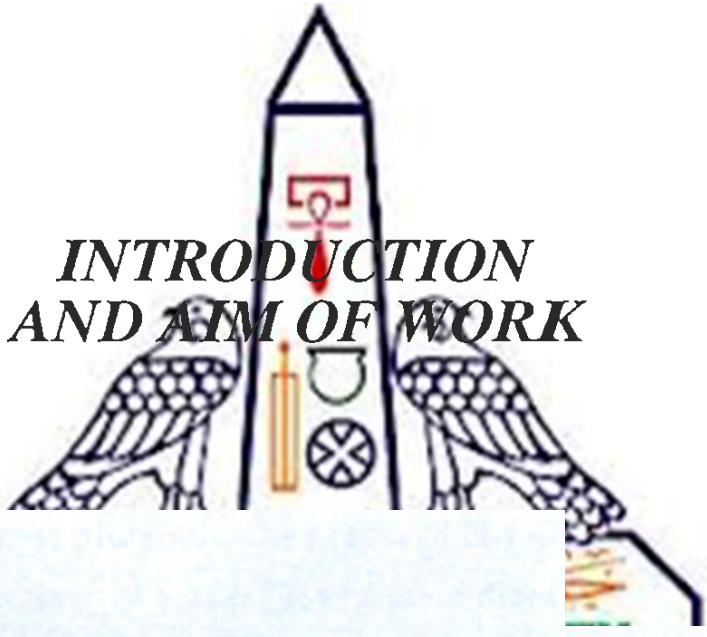

INTRODUCTION AND AIM OF WORK

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Diaetes mellitus is a chronic systemic disease characterised by metabolic disorder of insulin, carbohydrate, fat and protein as well as the structure and function of the blood vessels. the principle early symptoms and signs are usually related to metabolic defects, later these are linked to complications resulting from vascular changes. Among the metabolic disorders accompanying diabetes are: low glucose tolerance, increased levels of plasma lipids and increased excretions of urinary amino acids.

Since nutrition plays an important role both as causal factor or in the mode of treatment of diabetes, several dietary regimens have been designed depending upon restrictions of carbohydrate and substitutions with fat or proteins. Yashiro and Kimura (1979) stated that excess protein intake produced changes in blood tissue lipid concentration. Whereas low protein diets have been shown to elevated blood cholesterol levels, while high dietary protein lowered the concentration of lipids in blood plasma.

Data on the response of tissue glycogen levels to large intakes of protein are still scanty and not inconclusive (Weigand *et al.*, 1980). The mechanism by which protein exerts its effect on lipid and glycogen metabolism remains obscure.

The pattern of change in the concentration of different lipids with the nature of dietary protein varied with the nature of

the lipids and the tissue examined as demonstrated by Leelamma *et al.* (1978), who stated that not all animal proteins have a cholesterol and triglycerides elevating action and not all plant proteins have cholesterol and triglycerides lowering effect. Thus, the effect of dietary protein on serum lipid level depends on the nature of protein rather than whether it is an animal or plant protein.

The level and type of dietary proteins in dietary management of diabetes did not receive much attention that it deserved.

Thus, the aim of the present work is:

1. to study the response of plasma lipids and carbohydrates metabolism to different levels and types of dietary proteins on diabetes.
2. To study the effect of diabetes on the utilization of dietary proteins.

This will be of prime importance during formulation of aidy foods to control diabetes as well as regimens for diabetics.

REVIEW OF LITERATURE