بسم الله الرحمن الرحيم

شبكة المعلومـــــات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

﴿ قـــسـم ﴾

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأفلام قد اعدت دون آية تغيرات

يجب أن

تحفظ هذه الأفلام بعيداً عن الغبار

في درجة حرارة من 15 – 20 مئوية ورطوبة نسبية من 20-40 %

To be kept away from dust in dry cool place of
15 – 25c and relative humidity 20-40 %

بعض الوثائق الأصلية تالفة

بالرسالة صفحات

لم ترد بالأصـــل

BIOCHEMICAL STUDIES ON

SOME EGYPTIAN FOODS

BY

ASMAA AHMED MAHMOUD ALI

B.Sc. Agric. Sc(Biochemistry) Cairo University, 1997.

THESIS

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE

IN

BIOCHEMISTRY

BIOCHEMISTRY DEPARTMENT
FACULTY OF AGRICULTURE
CAIRO UNIVERSITY

2002

BIOCHEMICAL STUDIES ON SOME EGYPTIAN FOODS

BY

ASMAA AHMED MAHMOUD

B.Sc. Biochem. (Cairo University), 1997

This Thesis for M.Sc. Degree has been supervised by:

Prof. Dr.: **EMAM ABDEL MOBDI** .....

Professor of Biochemistry faculty of Agriculture, Cairo University

Prof. Dr.: **AKILA SALEH HAMZA** .....

Professor of Food science and technology, Director of Egyptian Danish project for central lab. for food and feed, Agric. Research Center.

APPROVAL SHEET

BIOCHEMICAL STUDIES ON SOME EGYPTIAN FOODS

BY

ASMAA AHMED MAHMOUD
B.Sc. Biochem. (Cairo University), 1997

This Thesis for M.Sc. Degree has been approved by:

Prof. Dr.: **Mounir Abdel Azim** .....

Professor of Biochemistry faculty of Agriculture, Moshtohor ~~University~~

Prof. Dr.: **Abdel Kader Moursy** .....

Professor of Biochemistry faculty of Agriculture, Cairo University

Prof. Dr.: **Emam Abdel Mobdi** .....

Professor of Biochemistry faculty of Agriculture, Cairo University.

COMMITTEE IN CHARGE

DATE: 30 / 7 / 2002

Name of Candidate . Asmaa Ahmed Mahmoud Ali ..... **Degree** M.Sc.
Title of Thesis... Biochemical studies on some Egyptian foods .....
.....
Supervisors..... Prof. Dr. Emam Abdel Mobdi Abdel Rahim .....
..... Prof. Dr. Akila Saleh Hamza .....
Department ..... Biochemistry .....
Branch..... Biochemistry ..... **Approval**.....

ABSTRACT

This study reveals the effect of common legumes (fababean and lentil as whole and dehulled seeds) in Egypt on normal and hypercholesterolemic rats .The chemical composition of these seeds before and after processing methods (soaking, germination and cooking) to remove most of the antinutritional factors and improve the protein quality. The protein and amino acids content were higher in the dehulled seeds than the whole seeds particularly in dehulled fababean, while dehulled lentil was higher in carbohydrate content than dehulled fababean. Crude fiber was higher in whole seeds than dehulled seeds chiefly in whole fababean. It was observed that there was a reduction in protein and fiber content and an increase in amino acids and carbohydrates contents after processing. Feeding normal and hypercholesterolemic male albino rats on diet supplemented with these processed legumes showed a reduction in the body weight, serum and liver total cholesterol, LDL-cholesterol, risk factor (Total / HDL-cholesterol) , serum and liver triglyceride, blood glucose , total protein , albumin , urea and creatinine but an increase in the levels of HDL-cholesterol and Hb in normal groups . Also, the hypercholesterolemic groups showed an improve in HDL-cholesterol and Hb levels but a reduction of elevation of other item levels occurred. No changes were observed in AP and transaminases activity. Finally, it was concluded that the consumption of these legumes especially its whole seeds had a protective effect on healthy male albino rats as well as a therapeutic diet for hypercholesterolemia.

Eman AA

ACKNOWLEDGEMENT

First and before all, I would like to thank **ALLAH** who granted me the ability to perform this assay and helped me to pass safely through all the difficulties I thought impossible to overcome.

I wish to express my grateful appreciation to Prof. Dr. Emam Abdel-Mobdi, professor of Biochemistry, Faculty of Agriculture, Cairo University for his supervision, valuable assistance and suggestions, useful advice and guidance through this thesis.

My deepest thanks and appreciation to Pro. Dr. Akila Saleh Hamza, Director of Egyptian Danish Project for central Lab. For food and feed, Agric. Res. Center, for her encouragement and continuous help.

My great thanks to Dr. Mohamed Massoud, Head of Biology Lab., central Lab. For Food and Feed, Agric. Res. Center, for his valuable help and sincere advice during this work.

Sincere thanks to Mr. Mamdouh Mohamed Taher, Medical Microbiologist, central Lab. For Food and Feed, for his great help and valuable advice in biochemical analysis involved in this work.

Special thanks to all the staff members and colleagues in the central Lab. For food and feed, Agriculture Research center and in the biochemistry department of faculty.

My deepest thankful, appreciation and gratitude to my father, mother and brother for their kind care, patience and encouragement through the progress of this work.

CONTENTS

INTRODUCTION

INTRODUCTION

Legumes play an important role in the traditional diets of most Mediterranean countries. In contrast in western countries beans tend to play only a minor dietary role despite the fact that they are low in fat and are excellent sources of carbohydrate, protein, dietary fiber and a variety of micronutrient ***(Messina, 1999)***.

These seeds contain substances referred to as antinutritional factors (ANF), because they can interfere with metabolic processes and reduce nutrient availability. There are more process traditionally used in the home to remove ANF such as soaking and then boiling.

In Egypt, the common legumes used are faba bean and lentil as whole or dehulled seeds. The observation that diets high in legumes are beneficial for health has recently become a topic of scientific interest. There is growing evidence that legumes play important roles in the prevention of chronic diseases ***(Kushi et al., 1999)***.

There has been a rapid increase in coronary heart disease (CHD), it is a major health problem that increases in the proportion of deaths. That proportion of death ranges from 25 to 45% ***(WHO, 1993)*** in the Eastern Mediterranean regions such as Egypt and Iran.

Coronary heart disease (CHD) is the leading cause death. CHD is caused by a narrowing of the coronary arteries that supply blood to the heart, and often results in a heart attack.

Hypercholesterolemia has been identified as a major risk factor of coronary artery disease. Thus, reductions in concentrations of total serum and