شبكة المعلومات الجامعية

التوثيق الإلكتروني والميكروفيلم

بسم الله الرحمن الرحيم

HANAA ALY

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

HANAA ALY

شبكة المعلومات الجامعية

التوثيق الإلكتروني والميكروفيلم

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات

يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار

HANAA ALY

The Effect of Clover Honey Supplementation on the Anthropometric Measurements and Lipid Profile of Malnourished Infants and Children

Thesis

For partial fulfillment of Master degree in pediatrics

By

Nagwa Ibrahim Mohamed Ibrahim

Degree: M.B., B.Ch, Faculty of Medicine, Ain Shams University (2015)

Supervised by

Prof. Mamdouh Abdulmaksoud Abdulrhman

Professor of Pediatrics

Faculty of Medicine, Ain Shams University

Dr. Bassma Abdel Nasser Mohammed Abdel Haleem

Lecturer of Pediatrics

Faculty of Medicine, Ain Shams University

Faculty of Medicine

Ain Shams University

2021


بسم الله الرحمن الرحيم
قَالُوا سُبْحَانَكَ لاَ عِلْمَ لَنَا إِلاَّ مَا
عَلَّمْتَنَا إِنَّكَ أَنتَ الْعَلِيمُ الْحَكِيمُ
صدق الله العظيم
سورة البقرة آية (32)

*First, thanks are all due to **Allah** for Blessing this work until it has reached its end, as a part of his generous help throughout our life.*

*It is great honor to express my deepest gratitude and cordial appreciation to **Prof. Mamdouh Abdulmaksoud Abdulrhman,** **Professor of Pediatrics, Faculty of Medicine, Ain Shams University,** for his meticulous supervision, constant guidance and encouragement.*

*I also thank **Dr. Bassma Abdel Nasser Mohammed Abdel Halim,** **Lecturer of Pediatrics, Faculty of Medicine, Ain Shams University,** for her valuable suggestions and encouragement.*

*None of my work would have been possible without the constant support of **My Family.** Last but not least, I want to express my deepest gratitude for **My Father** and my mother who enlightened all aspects of my life.*

Nagwa Ibrahim

List of Contents

List of Abbreviations

Abb.	Full term

APO B100..... Apolipoprotein B100
ASCVD ..... Atherosclerotic cardiovascular disease
BMI ..... Body mass index
CAD..... Coronary artery disease
CD ..... Cluster of differentiation
CETP ..... Cholesterol ester transfer protein
CVD..... Cardiovascular disease
DALYS..... Disability adjusted life years
DHS..... Demographic health survey
FCS ..... Familial chylomicronemia syndrome
FH ..... Familial hypercholesterolemia
GERD..... Gastroesophageal reflux disease
GH ..... Growth hormone
GI..... Gastrointestinal
HDL ..... High-density lipoproteins
HFA..... Height for age
HMG-CoA..... 3-hydroxy-3-methylglutaryl co enzyme A
IGF-1..... Insulin-like growth factor-1
IUGR..... Intrauterine growth retardation
LCAT ..... Lecithin cholesterol acyltransferase
LDL..... Low-density lipoproteins
LDLR..... LDL-receptor-
LPL ..... Lipoprotein lipase
MAM ..... Moderate acute malnutrition
MI..... Myocardial infarction
MUAC ..... Mid-upper-arm circumference

List of Abbreviations Cont...

Abb.	Full term

ORS..... Oral rehydration solution
PEM ..... Protein-energy malnutrition
RUSF ..... Ready-to-use supplemental food
RUTF ..... Ready- to-use therapeutic foods
SAM..... Severe acute malnutrition
T3 ..... Tri-iodothyroxine
TC..... Total cholesterol
TG..... Triglycerides
VLDL ..... Very low-density lipoprotein
WFA ..... Weight for age
WFH..... Weight for height

List of Tables

List of Tables Cont...

List of Figures

List of Figures Cont...

List of Figures Cont...

INTRODUCTION

Severe acute malnutrition (SAM) remains a substantial global health problem. Each year, SAM affects more than 18 million children, most living in low income settings. SAM contributes to 45% of all deaths in children less than 5 years of age world wide ***(Black et al., 2013).***

Studies have found that intrauterine and/or early life malnutrition may predispose the fetus and infants to metabolic disorders including dyslipidemia ***(Lussana et al., 2008).***

Since ancient times, honey has been used as a medicinal food. Honey was mentioned in several religious books, mainly in **Quran** ***(Purbafrani et al., 2014; Saxena et al., 2010).***

Honey is a natural sweetener, containing mainly monosaccharaides (up to 80%), disaccharides (3–5%), water (17–20%) and a wide range of minor constituents such as vitamins, minerals, proteins, amino acids, enzymes and phytochemicals, mainly phenolic acids and flavonoids ***(Escuredo et al., 2014).***

Honey has been shown to improve lipid profile, particularly cholesterol level in obese children. The exact mechanism of honey in the improvement of this risk factor has not been clearly determined. However, phenolic compounds present in honey are reportedly associated with improvement of coronary vasodilation, prevention of blood clots and protection of LDL-cholesterol from oxidation ***(Nguyen et al., 2019).***