

بسم الله الرحمن الرحيم





شبكة المعلومات الجامعية التوثيق الالكتروني والميكرو فيلم



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





بعض الوثائق الأصلية تالفة





بالرسالة صفحات
لم ترد بالأصل





Effect of Lactoferrin Supplementation on Appetite and Weight Loss in Obese School Age Children

Thesis

**Submitted for Partial Fulfillment of Master Degree
In Pediatrics**

Presented by

Islam Samy Ali AbdEl-Ghany Emara

M.B.B.Ch, 2013

Faculty of Medicine, Ain Shams University

Under The Supervision of

Prof. Hoda Lotfy El-Sayed

Professor of Pediatrics

Faculty of Medicine- Ain Shams University

Dr. Marian Girgis Rizk

Lecturer of Pediatrics

Faculty of Medicine- Ain Shams University

Faculty of Medicine

Ain Shams University

2019

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قَالَ

سُبْحَانَكَ لَا يُلْمُ لَنَا
إِلَّا مَا عَلِمْنَا إِنَّكَ أَنْتَ
الْعَلِيمُ الْعَظِيمُ

صدق الله العظيم

سورة البقرة الآية: ٢٢

Acknowledgment

*First and foremost, I feel always indebted to **ALLAH**, the Most Kind and the Most Merciful.*

*I'd like to express my respectful thanks and profound gratitude to **Prof. Hoda Lotfy ElSayed**, Professor of Pediatrics - Faculty of Medicine- Ain Shams University for her keen guidance, kind supervision, valuable advice and continuous encouragement, which made possible the completion of this work.*

*I am deeply thankful to **Dr. Marian Girgis Rizk**, Lecturer of Pediatrics, Faculty of Medicine, Ain Shams University, for her great help, active participation and patient guidance.*

I would like to express my hearty thanks to all my family, my wife and my colleagues for their encouragement and advice till this work has completed.

Last but not least my sincere thanks and appreciation to all patients who participated in this study.

Islam Samy Ali Emara

List of Contents

Title	Page No.
List of Abbreviations.....	i
List of Tables	iv
List of Figures	vi
Abstract	viii
Introduction	1
Aim of the Work.....	3
Review of Literature	
▪ School-Aged Childhood Obesity	4
▪ Appetite in Obese Children.....	19
▪ Lactoferrin.....	29
▪ Effect of Lactoferrin on Appetite and Obesity	37
Patients and Methods.....	43
Results	54
Discussion	84
Summary	92
Conclusion	96
Recommendations	97
References	98
Arabic Summar	—

List of Abbreviations

Abb.	Full term
AgRP.....	Agouti-related peptide
ARC	Arcuate nucleus
BBB	Blood brain barrier
bLF	Bovine lactoferrin
BMI.....	Body Mass Index
CART.....	Cocaine and amphetamine related transcript
CB	Cannabinoid
CBC	Complete blood count
CCK.....	Cholecystokinin
CDC	Centers for Disease Control and Prevention Organization
CEBQ.....	Child Eating Behavioral Questionnaire
DD.....	Desire to drink
DEXA.....	Dual energy x-ray absorptiometry
DMN	Dorsomedial hypothalamic nucleus
EDTA.....	Ethylenediamine tetraacetic acid (anticoagulant)
EF	Enjoyment of food
EOE	Emotional over eating
EUE	Emotional under eating
FDA	Food and Drug Administration
FF	food fussiness
FFA.....	Free fatty acids
FISH.....	Fluorescence in situ hybridization
FR	Food responsiveness
GLP-1	Glucagon like peptide 1 hormone
HDL.....	High density lipoproteins
HFD	High fat diet study group
HRP	Horseradish peroxidase enzyme (conjugated to streptavidin protein)

List of Abbreviations Cont...

Abb.	Full term
LDL.....	Low density lipoproteins
LF	Lactoferrin
LHA	Lateral hypothalamic area
LPS	Lipopolysaccharide
MAOIs	Mono oxidase inhibitors
MSH.....	Melanocyte stimulating hormone
NAFLD	Non-alcoholic fatty liver disease
NEFA.....	Non-esterified (free or unsaturated) fatty acids
NHANES	National Health and Nutrition Examination Survey
Non- LF	Non Lactoferrin study group
NPY	Neuropeptide Y
NTY	Nucleus tractus solitarius
Ob gene.....	Obese gene
OXM	Oxyntomodulin peptide hormone
P value.....	Probability value
PCOS	Polycystic ovary syndrome
POMC	Pro-opiomelanocortin
PP	Pancreatic Polypeptide hormone
PVN	Paraventricular nucleus of hypothalamus
PYY.....	Peptide YY hormone
SD	Standard Deviation
SE	Slowness in eating
SPSS	Statistical Package for the Social Sciences (IBM Company)
TBF.....	Total body fat
TC	Total cholesterol
TCAs	Tricyclic antidepressants
TG.....	Triglyceride

List of Abbreviations Cont...

Abb.	Full term
TMB.....	Tetramethylbenzidine (enzyme substrate)
VFA.....	Visceral fat area measured by CT scan
W/H ratio.....	Waist to hip ratio
WHO	World Health Organization

List of Tables

Table No.	Title	Page No.
Table (1):	Shows the effect of some gut hormones on food intake and appetite, their sources of secretion and their levels in obese children	23
Table (2):	Comparison between the two groups as regards age and gender.....	56
Table (3):	Comparison between the initial anthropometric measurements in both study groups.	57
Table (4):	Comparison of Anthropometric and body composition measures after intervention between both study groups.	58
Table (5):	Comparison of the initial 24 hours dietary recall between both study groups.....	60
Table (6):	Comparison of the 24 hours dietary recall between both study groups after intervention.	61
Table (7):	Comparison of the initial CEBQ parameters and subscales between both study groups.....	63
Table (8):	Comparison of the CEBQ parameters and subscales between both study groups after intervention.	64
Table (9):	Comparison of initial serum leptin level between the two study groups.....	65
Table (10):	Comparison of serum leptin level between the two study groups after intervention.	66
Table (11):	Comparison of initial lipid profile between the two study groups.	68
Table (12):	Comparison of lipid profile between the two study groups after intervention.	69
Table (13):	Comparison of exercise performance between the two study groups before intervention.....	72

List of Tables Cont...

Table No.	Title	Page No.
Table (14):	Comparison of exercise performance between the two study groups after intervention.	73
Table (15):	Comparison of the difference between initial and follow up Anthropometric measurements and body composition parameters between the two study groups.	74
Table (16):	Comparison of the change of the 24hrs dietary recall and CEBQ parameters between the two study groups.	76
Table (17):	Comparison of the change of serum leptin and lipid profile between the two study groups.	78
Table (18):	Paired comparisons within LF group of anthropometric, dietary and biochemical indices before and after intervention.....	81
Table (19):	The relationship between rate of change of leptin level and other studied data after intervention in both groups.	82

List of Figures

Fig. No.	Title	Page No.
Figure (1):	The gut hormones signaling to the brain under fasted and fed states	26
Figure (2):	Role of lactoferrin in activation of immune system	34
Figure (3):	Flow chart of the studied cases.....	55
Figure (4):	This bar graph demonstrates comparison of mean body weight before and after intervention between both study groups.	59
Figure (5):	This bar graph demonstrates comparison of mean BMI before and after intervention between both study groups	59
Figure (6):	This bar graph demonstrates comparison of mean 24 daily caloric intake between both study groups before and after intervention.....	62
Figure (7):	This bar graph demonstrates comparison of total CEBQ score between both study groups before and after intervention.....	65
Figure (8):	This bar graph demonstrates comparison of serum leptin level between the two study groups before and after intervention.....	67
Figure (9):	This bar graph demonstrates comparison of mean serum LDL level between the two study groups before and after intervention.....	70
Figure (10):	This bar graph demonstrates comparison of mean serum HDL level between the two study groups before and after intervention.....	70