Role of Diet in Acne:

A Descriptive Study.

A Thesis

Submitted for Fulfillment of

Master Degree in Dermatology and Andrology

By

Ruba Ali Mohamed Ali Sabra

(M.B.B.Ch.)

Supervised By

Prof. Dr. Nadia Farag Rizk Saleh

Professor of Dermatology

Faculty of Medicine

Cairo University

Prof. Dr. Shahira Abdel Rahman Ramadan

Professor of Dermatology

Faculty of Medicine

Cairo University

Dr. Ola Mohamad Abu Zeid

Lecturer of Dermatology

Faculty of Medicine

Cairo University

2010



ACKNOWLEDGEMENT

Thanks to Allah for giving me the power and strength to carry out this work.

Words stand short where they come to express my gratefulness to my supervisors.

I would like to express my thanks and deepest gratitude to *Prof Dr. Nadia Saleh*, Professor of Dermatology, Faculty of Medicine, Cairo University for her remarkable effort and help. My deep gratitude goes to *Prof. Dr. Shahira Ramadan* Professor of dermatology, Faculty of Medicine, Cairo University, for her kind help and great support throughout this work and her continuous guidance which were the major factor behind the completion of this work.

My deep gratitude goes to *Dr. Ola Abu Zeid*, Lecturer of dermatology, Faculty of Medicine, Cairo University for her valuable advice, her kind help and her continuous guidance.

My gratitude goes to Dr. Shaimaa Baher Lecturer of Community for her help and for being our dietitian expert.

I would like to express my great thanks to all members of my family especially my mother and father for providing love and care till I finished this work and forever.

<u>ABSTRACT</u>

Acne is a disease of the pilosebaceous units in the skin a wide variety of food items have been postulated to be associated with acne a relationship between the degree of acne and the frequency of consumption of fats oils meat grilled fish and tea with milk was found there is a negative correlation between the frequency of consumption of fresh vegetables and the severity of one while a positive correlation was found between the frequency of consumption of nuts chocolate candy and tea without milk and the severity of acne lesions however no relation or correlation was found between the consumption of milk and other dairy products and the severity of acne lesions

Key words

Acne vulgaris_ nuts_ chocolate candy_ fresh vagetables_ milk products

Contents

Acknowledgement:	i
List of Abbreviations	ii
List of Figures	iv
List of Tables	vi
Introduction and Aim of Work	1
Review of Literature	
Chapter I	
- Acne vulgaris	4
Chapter II	
- Pathogenesis of Acne	9
Chapter III	
- Diet and Acne	42
Patients and Methods	76
Results	78
Discussion	132
Summary	141
Recommendations	143
References	145
Arabic Summary	

List of tables

Title	Page
Table (1): Composition of sebum.	17
Table (2): Personal characteristics of the studied acne patients.	78
Table (3): Clinical data of the studied acne patients.	79
Table (4): Relation between personal characters of the studied group and degree of acne.	81
Table (5): The relation between the degree of acne in the studied patients and their medical characteristics.	82
<u>Table (6)</u> : Lipid profile of the studied Acne patients.	84
Table (7): Main dietary habits adapted by the studied acne patient.	84
Table (8): Main dietary habits adapted by the studied acne patient.	85
Table (9): Main dietary habits adapted by the studied acne patient.	86

Table (10): Relation between dietary habits of the studied patients and their degree of acne.	87,88
Table (11):Frequencies of consumption of different types of milk.	89
<u>Table (12)</u> : Frequencies of consumption of different kinds of cheese.	91
Table (13):Frequencies of consumption of other dairy products by the studied patients.	92
Table (14): Relation between the frequency of consumption of different types of milk and severity of acne.	93
<u>Table (15)</u> : Relation between the frequency of consumption of dairy products and severity of acne.	95
<u>Table (16)</u> : Relation between the frequency of consumption of dairy products and severity of acne.	96,97
Table (17): Relation between frequency of consumption of milk & dairy products as one item and severity of acne.	98
Table (18): Frequency of consumption of fats & oils by the studied patients.	98

<u>Table (19</u>): Relation between the frequency of consumption of fats &oils and severity of acne lesions.	99
<u>Table (20)</u> : Frequencies of consumption of cereals.	100
<u>Table (21)</u> : Relation between frequency of consumption of carbohydrates(cereals) and severity of acne.	101
<u>Table (22)</u> : Frequencies of consumption of pulses.	102
Table (23): Relation between frequency of consumption of (pulses) and severity of acne.	103
<u>Table (24):</u> Frequencies of consumption of sweets & sugars.	104
<u>Table (25):</u> Relation between frequency of consumption of carbohydrates (sweets &sugars) and severity of acne.	105
<u>Table (26):</u> Frequencies of consumption of fresh fruits, vegetables and cooked vegetables.	106
Table (27): Relation between frequency of consumption of carbohydrates(fresh fruits) and severity of acne.	107
<u>Table (28):</u> Relation between frequency of consumption of_carbohydrates (fresh vegetables) and severity of acne.	107

<u>Table (29):</u> Correlation between frequency of consumption of carbohydrates(fresh vegetables) and severity of acne.	108
Table (30): Relation between frequency of consumption of carbohydrates(cooked vegetables) and severity of acne.	109
Table (31): Frequencies of consumption of meat.	110
<u>Table (32):</u> Relation between frequency of consumption of meat and severity of acne.	111
<u>Table (33):</u> Frequencies of consumption of poultry.	113
<u>Table (34):</u> Relation between frequency of consumption of poultry and severity of acne.	114
Table (35): Frequencies of consumption of fish.	115
<u>Table (36):</u> Relation between frequency of consumption of proteins(fish) and severity of acne.	116
Table (37): Frequencies of consumption of liver& eggs.	117
Table (38): Relation between frequency of consumption of liver &eggs and severity of acne.	118
<u>Table (39</u>): Frequency of consumption of nuts.	119

Table (40): Relation between frequency of consumption of nuts and severity of acne.	119
Table (41):Correlation between the frequency of consumption of nuts and severity of acne in the studied patients.	120
Table (42): Frequency of consumption of chocolate candy.	121
Table (43): Relation between frequency of consumption of chocolate candy and severity of acne.	121
Table (44): Correlation between the frequency of consumption of chocolate candy and severity of acne.	122
Table (45): Frequency of consumption of beverages (chocolate milk drink).	123
Table (46): Relation between frequency of consumption of chocolate milk drink and severity of acne.	123
Table (47): Frequency of consumption of tea.	124
Table (48): Relation between frequency of consumption of tea and severity of acne.	125
Table (49): Correlation between the frequency of consumption of tea and severity of acne.	126

<u>Table (50):</u> Frequency of consumption of Instant coffee.	127
Table (51): Relation between frequency of consumption of Instant coffee and severity of acne.	128
Table (52): Frequency of consumption of green tea & Turkish_coffee.	129
Table(53): Relation between frequency of consumption of green tea & Turkish coffee and severity of acne.	129
<u>Table (54</u>): Frequency of consumption of pickles.	130
Table (55): Relation between frequency of consumption of pickles and severity of acne.	130
<u>Table (56):</u> Summary of Results (Correlations).	131
Table (57): Summary of Results (Relations).	131

List of abbreviations

AM Adrenomedullin

BMI Body Mass Index

BST Bovine Somsatotropin

BTC Betacellulin

CK CytoKeratin

CRH Corticotrophine Releasing Hormone

DHEA Dehydroepiandrosterone

DHT Dihydrotestosterone

EGFR Epidermal Growth Factor Receptor

FFQ Food Frequuency Questionnaire

GI Glycemic Index

GL Glycemic Load

HB-EGF Heparin Binding Epidermal Growth Factor

HGL High Glycemic Load

HLA Human Leucocytic Antigen

HSD HydroxySteroid Dehydrogenase

IGF-1 Insulin like Growth Factor-1

IGFBP-1 Insulin like Growth Factor Binding Protein -1

IGFBP-3 Insulin like Growth Factor Binding Protein -3

IL-1α Interlukin 1-alpha

K6 Keratin 6

LGL Low Glycemic Load

LPS Lipopolysaccharides

MHC Major HistoComptability Complex

MMP Matrix Metallo Proteinases

NEFAs Non Esterified Free Fatty Acids

NGF Nerve Growth Factor

NKT Natural Killer T

NPs NeuroPeptides

P. acnes Propionibacterium acnes

PAMPs Pathogen-Associated Molecular Patterns

PCOs Poly Cystic Ovarian syndrome

POMC PropioMelanoCortin

PPAR Peroxisome Proliferator-Activated Receptors

PRRs Pattern Recognition Receptors

PSU Pilosebaceous Unit

r BGH recombinant Bovine Growth Hormone

SHGB Sex -Hormone Binding Globulin

SIS Skin Immune System

T Testosterone

TGF-α Tumor Growth Factor- alpha

TLRs Toll-Like Receptors

TNF Tumor Necrosis Factor

List of figures

Title	Page
Fig. 1: Comedones.	6
Fig. 2: Papules and Pustules.	6
Fig. 3: Nodule and Cyst.	7
Fig. 4: Modern aspects of acne pathogenesis.	9
Fig. 5: Normal pilocebaceous unit.	10
Fig. 6: Pathways of C19 Steriod metabolism.	20
Fig. 7: Types of acne lesions in relation to pathogenic factors.	31
Fig. 8: The innate immune response in acne.	38
Fig. 9: Hormonal Changes Elicited by high Glycemic Load Diets Which Promote Acne.	51
Fig. 10: Influence of high glycemic meals and snacks on the day long concentrations of plasma insulin in 7 healthy male subjects.	56
Fig. 11: Degree of acne severity in the studied acne patients.	80
Fig. 12: Relation between hirsutism & degree of acne.	83
Fig.13: Relation between the frequency of consumption of plant oil & degree of acne.	99

Fig. 14: Correlation between frequency of consumption of fresh vegetables °ree of acne.	108
Fig. 15: Relation between the frequency of consumption of high fat meat & degree of acne.	112
Fig. 16: Relation between the frequency of consumption of low fat meat & degree of acne.	112
Fig. 17: Correlation between frequency of consumption of nuts °ree of acne.	120
Fig. 18: Correlation between frequency of consumption of chocolate candy °ree of acne.	122
Fig. 19: Correlation between frequency of consumption of tea without milk °ree of acne.	126