

Contents

Subject	Pages
Acknowledgment	
List of Abbreviations	
List of Tables	
List of Figures	
Introduction	1
Aim of the Work	3
Review of Literature	
Chapter 1: Obesity	4
Definition of obesity.	4
Techniques for estimating body fat.	5
Adipose tissue	12
Physiological regulation of energy balance	17
Regulation of energy expenditure	22
Genetics of obesity	24
Classification and evaluation of obesity	26
Chapter 2: Consequences of Obesity	23
Psychological consequence of obesity	33
Behavioural consequence of obesity	33
Medical consequence of obesity	34
Chapter 3: Treatment of Obesity	47
Benefits of weight loss	49
Diet control	51
Exercise	62
Behavioural therapy	71

Pharmacological therapy	73
Herbal products	83
Surgical treatment	87
Chapter 4: Acupuncture	91
Introduction	91
Channels and organs	93
Mechanisms of acupuncture effect	100
Acupuncture technique	105
Auricular acupuncture	117
Complications of acupuncture	125
Chapter 5: Acupuncture and Obesity	127
Introduction	127
Results of clinical trials with acupuncture in obesity	129
Material and Methods	137
Statistical analysis	156
Results	157
Discussion	190
Summary and Conclusion	202
Appendix	212
References	221
Arabic Summary	

List of Figures

Figure	Title	Pages
1	Nomogram for determining body index.	10
2	Factors released by the adipocyte.	14
3	Peripheral signals and central pathways involved in the control of food intake.	21
4	Risk classification algorithm.	48
5	The large intestine channel	96
6	The stomach channel	97
7a, b	The spleen channel	98
8a, b	The conception channel	99
9	Parts of acupuncture needle	106
10	Different posture of the patients during acupuncture application	107
11,12,13	Proportional cun measurements	109
14	The length of various parts of the body by Cun	110
15	Different methods of needle insertion	112
16	Angles of acupuncture insertion	113
17	Anatomical structure of the auricular surface	119
18	Schematic diagram of distribution of auricular points	122
19	The thumbtack needle	124
20	Scheme of distribution of the vagus nerve	128
21	A tentative scheme to explain the effects of bilateral auricular acupuncture	135
22	Tianshu (ST25), Huaroumen (ST24) and Wailing (ST26) points	146
23	Xiawan (Ren 10) and Shimen (Ren 5)	147

24	Quchi (LI 11) point	148
25	Zusanli (ST 36) point	149
26	Portable point detector (stimul 3) made in Czechoslovakia	150
27	Methods for needle insertion	151
28	Methods for needle insertion	152
29	Electric stimulator control	153
30	The major auricular acupoints selected for body weight control	155
31	Female to male ratio of the studied group	169
32	Percentage of changes in weight in the studied group	170
33	Percentage of changes in BMI in the studied group	171
34	Percentage of changes in SBP in the studied group	172
35	Percentage of changes in DBP in the studied group	173
36	Percentage of changes in right arm circumference in the studied group	174
37	Percentage of changes in right thigh circumference in the studied group	175
38	Percentage of changes in chest circumference in the studied group	176
39	Percentage of changes in abdominal circumference in the studied group	177
40	Percentage of changes in head circumference in the studied group	178
41	Percentage of changes in waist hip ratio in the studied group	179
42	Percentage of changes in biceps skinfold thickness in the studied group	180

43	Percentage of changes in triceps skinfold thickness in the studied group	181
44	Percentage of changes in subscapular skinfold thickness in the studied group	182
45	Percentage of changes in subrailiac skinfold thickness in the studied group	183
46	Percentage of changes in triglycride level in the studied group	184
47	Percentage of changes in total cholesterol level in the studied group	185
48	Percentage of changes in HDL level in the studied group	186
49	Percentage of changes in LDL level in the studied group	187
50	Percentage of changes in serotonin level in the studied group	188
51	The best model for improvement with acupuncture treatment of obese patient	189

List of Tables

Table	Title	Pages
1	Weight reduction treatment options based on health risk.	49
2	Benefits of a 10% loss in body weight.	50
3	Advantage of physical activity.	64
4	The approximate energy expenditure in selected activities for people of different weights.	70
5	Pharmacokinetics of anolectic medication.	76
6	Herbal products used in treatment of obesity.	83
7	Technique for estimating serum serotonin level.	141
8	Sex of the studied groups.	169
9	Age in years of the studied groups.	169
10a	Weight in kg before and after treatment and the percentage of changes in weights in the studied groups.	170
10b	Comparison of the percentage of reduction in weight after treatment between each of the studied groups.	170
11a	Body mass indices before and after treatment and the percentage of changes in weights in the studied groups.	171
11b	Comparison of the percentage of reduction in BMI after treatment between each of the studied groups.	171
12a	Systolic blood pressure (SBP) in (mmHg) before and after treatment and the percentage of changes in weights in the studied groups.	172
12b	Comparison of the percentage of reduction in SBP	172

	after treatment between each of the studied groups.	
13a	Diastolic blood pressure (DBP) in (mmHg) before and after treatment and the percentage of changes in weights in the studied groups.	173
13b	Comparison of the percentage of reduction in DBP after treatment between each of the studied groups.	173
14a	Right arm circumference (Rtac) in (cm) before and after treatment and the percentage of changes in weights in the studied groups.	174
14b	Comparison of the percentage of decrease in Rtac after treatment between each of the studied groups.	174
15a	Right thigh circumference (Rttc) in (cm) before and after treatment and the percentage of changes in weights in the studied groups.	175
15b	Comparison of the percentage of decrease in Rttc after treatment between each of the studied groups.	175
16a	Chest circumference (Chc) in (cm) before and after treatment and the percentage of changes in weights in the studied groups.	176
16b	Comparison of the percentage of decrease in Chc after treatment between each of the studied groups.	176
17a	Abdominal circumference (Abc) in (cm) before and after treatment and the percentage of changes in weights in the studied groups.	177
17b	Comparison of the percentage of decrease in Abc after treatment between each of the studied groups.	177
18a	Hip circumference (Hc) in (cm) before and after treatment and the percentage of changes in weights in	178

	the studied groups.	
18b	Comparison of the percentage of decrease in Hc after treatment between each of the studied groups.	178
19a	Waist to hip ratio (WHR) before and after treatment and the percentage of changes in weights in the studied groups.	179
19b	Comparison of the percentage of decrease in WHR after treatment between each of the studied groups.	179
20a	Biceps skinfold thickness in (cm) before and after treatment and the percentage of changes in weights in the studied groups.	180
20b	Comparison of the percentage of decrease in biceps skinfold thickness after treatment between each of the studied groups.	180
21a	Triceps skinfold thickness in (cm) before and after treatment and the percentage of changes in weights in the studied groups.	181
21b	Comparison of the percentage of decrease in triceps skinfold thickness after treatment between each of the studied groups.	181
22a	Subscapular skinfold thickness in (cm) before and after treatment and the percentage of changes in weights in the studied groups.	182
22b	Comparison of the percentage of decrease in subscapular skinfold thickness after treatment between each of the studied groups.	182
23a	Suprailiac skinfold thickness in (cm) before and after treatment and the percentage of changes in weights in	183

	the studied groups.	
23b	Comparison of the percentage of decrease in suprailiac skinfold thickness after treatment between each of the studied groups.	183
24a	Triglyceride (TG) level in (mg/dl) before and after treatment and the percentage of changes in weights in the studied groups.	184
24b	Comparison of the percentage of decrease in TG after treatment between each of the studied groups.	184
25a	Total cholesterol (TC) level in (mg/dl) before and after treatment and the percentage of changes in weights in the studied groups.	185
25b	Comparison of the percentage of decrease in TC after treatment between each of the studied groups.	185
26a	High density lipoprotein (HDL) cholesterol level in (mg/dl) before and after treatment and the percentage of changes in weights in the studied groups.	186
26b	Comparison of the percentage of increase in HDL after treatment between each of the studied groups.	186
27a	Low density lipoprotein (LDL) cholesterol level in (mg/dl) before and after treatment and the percentage of changes in weights in the studied groups.	187
27b	Comparison of the percentage of decrease in LDL after treatment between each of the studied groups.	187
28a	Serotonin level in (ug/ml) before and after treatment and the percentage of changes in weights in the studied groups.	188
28b	Comparison of the percentage of elevation in	188

	serotonin level after treatment between each of the studied groups.	
29	The best model for improvement with acupuncture treatment of obese patient.	189