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Effects of herbal extract on the weight factor of obese women sample in AL- Ramadi city

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Introduction

Obesity defined as the fat accumulation in different body area, has become an important cause of high rates of chronic and non-communicable diseases to the point that it is now considered a chronic disease [1]. Obesity is directly linked to multiple diseases such as diabetes, high blood pressure, heart disease, and some types of cancer [2].

Statistics indicate that 2.1 billion people around the world suffer from overweight or obesity (that is, approximately one-third of the Earth's population) [3], which portends major health risks if it is not controlled and solutions are found that contribute to reducing the spread of obesity around the world.

Recently, plant foods and medicinal herbs have received great attention as therapeutic alternatives from researchers and the general public because they are more accessible, less expensive, and often cause fewer side effects than synthetic drugs [4].

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The effect of an herbal extract composed of plants (Nigella sativa, Origanum vulgare, Cinnamomum burmannii, Sesamum indicum, Elettaria cardamomum, Citrus sinensis, Cocos nucifera, Avena sativa, Salvia hispanica) was studied on 41 women (Treatment group) suffering from obesity with an average age of (20-40) years in the Ramadi city, the dose was a mixture of the previously mentioned plants at 20 grams per day, compared to 20 women (control group) were not given the extract. All women followed a diet consisting of (carbohydrates 50%, protein 30%, fats 20%) the experiment continued for 60 days, during which weight was calculated after 30 days and 60 days of treatment. The results showed no significant difference during 30 days, while there was a clear significant difference during a period of 60 days. The total weight loss for women in the treatment group was (11.16 kg) compared to the control group (5.37 kg), which means that the rate of weight loss for women in the treatment group was more than double compared to the control group, and this is a good indication for using this herbal mixture in weight loss.

Evidence has demonstrated the positive effects of some medicinal herbs in influencing weight loss and reducing obesity complications [4,5]. One of these herbs is *Nigella sativa* [6,7,8,9].

[10] reported that N. sativa supplements have a moderate effect on reducing body weight, and BMI, as some recent research has also indicated the anti-obesity properties of *N. sativa*, the therapeutic effects of which are mainly related to thymoquinone (TQ) which represents (30-48%) of *N. sativa* oil, in addition to the presence of other components, including thymol, dithymoquinone, thymohydroquinone, nigellone and its derivatives, alpha-hederin, flavonoids, and fatty acids (linoleic acid, oleic acid, and others) may also participate in the pharmacological properties [11,12].

[13] confirmed that *O. vulgare* seeds possess antiobesity effects by containing phenolic compounds and terpenoids in influencing the expression of mRNA and proteins associated with adipogenic differentiation and fat accumulation. [14] showed that *C. burmannii* significantly affects obesity measures and can be recommended as a supplement for weight loss. [15] indicated that *S. indicum* oil led to a significant decrease in body weight, body mass index, body fat percentage and

ABSTRACT

the body adiposity index (BAI) decreased significantly after eating *S. indicum.* [16] observed that *E. cardamomum* increases lipolysis in adipose tissue, metabolism in the liver and skeletal muscle, leading to increased energy expenditure and decreased body fat mass.

[17] indicated that the use of *C. sinensis* led to a decrease in the fat percentage in the plasma and an increase in the fatty acids oxidation in the liver, which leads to a decrease in liver fat. [18] also confirmed that *C. nucifera* powder showed a significant decrease in body weight, total fat, cholesterol, triglycerides, low density lipoprotein (LDL), very low-density lipoprotein (VLDL), and liver enzymes (Aspartate Aminotransferase (AST), Alanine Transaminase (ALT) and Leucine Amino Peptidase (LAP)) in obese rats.

The current study aims to use an herbal mixture consisting of the following plants (*Nigella sativa*, *Origanum vulgare*, *Sesamum indicum*, *Cinnamomum burmannii*, *Elettaria cardamomum*, *Citrus sinensis*, *Cocos nucifera*, *Avena sativa*, *Salvia hispanica*) and evaluate it in its effect on weight loss for a group of women in the city of Ramadi.

Materials and Methods

This study was conducted in the Ramadi city, the center of Anbar Governorate, in the period between (1/4/2023 - 1/6/2023) on a Woman samples visiting nutrition centers obesity suffered. The experiment included 61 women with an average body mass of (39 kg/m2) and an average age of (20-40) years, who applied a balanced nutritional system [19] with a daily caloric deficit of 500 calories from the basal metabolic rate (BMR)[20], for two consecutive months. Their weights were taken before applying the study, 30 days after applying it, and after 60 days.

A nutritional herbal extract was prepared (its components were obtained from the markets of the Ramadi city) consisting of the following materials in different proportions:

- 1. N. sativa
- 2. O. vulgare
- 3. S. indicum
- 4. C. burmannii
- 5. E. cardamomum
- 6. C. sinensis
- 7. C. nucifera
- 8. A. sativa
- 9. S. hispanica

The materials were ground individually in an electric grinder (Croun Romx) and then mixed in specific proportions. The mixture was then stored in sterile plastic boxes at laboratory temperature.

The study sample was distributed into two groups, the first group (N=41) was given the prepared herbal mixture at a rate of 20 gm/day (10 grams half an hour before lunch and 10 grams half an hour before dinner), while continuing to follow a balanced nutritional system [19]. The herbal mixture is soaked in hot sterile water for half an hour before use.

As for the second group (N=20), they continued to follow the same balanced diet[19] but without using the prepared herbal mixture (control group).

The results were statistically analyzed using the ready-made SPSS program, version 25, two-way analysis of variance was performed, means were tested with Duncan's test (total loss), and the t-test was adopted for independent samples.

Results and Discussion

Table (1) shows the average weight of the samples under study during the study period. The results showed a significant difference at ($p \le 0.05$) between the treatment sample (N=41), which was (5.583), and the control sample (N=20), which was (2.685), as shown in table (2).

| | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | Time | | |
|-----------|---|-------------|---------|---------|
| | | Initial | | |
| | | weight (kg) | 30 days | 60 days |
| Control | Mean | 97.98 | 95.91 | 93.42 |
| | Std. Deviation | 5.18 | 5.19 | 5.24 |
| Treatment | Mean | 108.52 | 102.68 | 97.14 |
| | Std. Deviation | 12.42 | 12.70 | 12.80 |

Table 1. Average weight of the studied samples

Table 2. Statistical analysis table

| Sampla | Mean | 95% ConfidStd.IntervaErrorLower | | fidence val |
|-----------|--------|---------------------------------|-------|----------------|
| Sample | (kg) | | | Upper |
| | | | Bound | Bound |
| Control | 2.685b | .177 | 2.333 | 3.037 |
| Treatment | 5.583a | .177 | 5.231 | 5.934 |

Weight loss was also analyzed during the study period (60 days), which showed that there was no significant difference between weight loss in the first and second months for the total study cases (control and treatment) (N=61), as shown in table (3).

 Table 3. Weight loss during the study period for the total number of cases

| Time | Mean | Std. | 95% Confidence Interval | | |
|---------|------------|------|-------------------------|--------------------|--|
| Time | (kg) Error | | Lower Bound | Upper Bound | |
| 30 days | 4.245b | .177 | 3.893 | 4.597 | |
| 60 days | 4.022b | .177 | 3.671 | 4.374 | |

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The results showed that there was a significant difference between the treatment sample (N=41) and the control sample (N=20) and that there was no significant difference in weight loss during the period for each of them separately, as shown in table (4).

| Somulo | Time Mean | | Std. | Std. | 95% Confidence Interval | |
|-----------|-----------|--------|-------|-----------|----------------------------|----------------|
| Sample | Time | (kg) | Error | Deviation | Lower Bound | Upper Bound |
| Control | 30 Days | 2.650b | .250 | 1.08846 | 2.153 | 3.147 |
| | 60 Days | 2.720b | .250 | .74098 | 2.223 | 3.217 |
| Treatment | 30 Days | 5.840a | .250 | 1.30077 | 5.343 | 6.337 |
| | 60 Days | 5.325a | .250 | 1.25063 | 4.828 | 5.822 |

 Table 4. Weight decreases between the treatment and control conditions during the study period

The results of the statistical analysis for the total study samples showed that there was a highly significant difference in weight reduction between the control sample (N=20), which was 5.3700, and the treatment sample (N=41), which was 11.1650 for the total duration of the study (60 days), as shown in table (5).

| Table 5. Reduced overall we | eight (kg) |
|-----------------------------|------------|
|-----------------------------|------------|

| Sample | Ν | Mean (kg) | Std. Deviation | Std. Error Mean |
|-----------|----|--------------|----------------|--------------------|
| Control | 20 | 5.3700 | 1.28354 | .28701 |
| Treatment | 41 | 11.1650 | 1.86160 | .41627 |

Discussion

According to the current study, there are notable variations in weight reduction while utilizing the mixture of medicinal herbs, the percentage of weight loss doubled, as the effect of dietary fiber present in the components of the mixture on the weight factor was based on its ability to reduce the absorption of sugars in the blood. In addition to improving the process of digestion and waste excretion as well, which is attributed to the sensation with fullness and for long periods, all of this helps in reducing the amounts of food consumed daily. In addition to increasing the metabolism levels and thus burning larger amounts of fat stored in various parts of the body [21].

The presence of cinnamon as a component of the mixture plays a major and essential role in maintaining blood sugar levels, thus clearly helping to reduce body mass index and body weight [22], it can be recommended as a weight-reducing supplement in the management of obesity [14]. In addition, *N. sativa*, or black seed, had an effective role as it is a widely used

medicinal herbs that acts as an antioxidant, is linked to adjusting blood sugar levels and treating metabolic disorders [10]. With regard to coconut and dried oranges, there were two goals: the first was to make the mixture palatable when eaten, and the other was to have a high amount of fiber [23].

As for wild Oregano, is an aromatic plant that contains antiseptic and anti-toxin substances that facilitate the process of digestive and laxative; it also contains antioxidants and provides antimicrobial activity [24].

Conclusions

The results showed the positive effect of the prepared herbal mixture on the studied sample through a noticeable decrease in weight within two months, which constitutes a contributing factor in preventing obesity and its serious health complications. More studies are needed to confirm our results and demonstrate their implications for other biomarkers.

Acknowledgments

None.

Conflict of Interest

There is no conflict of interest..

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تأثير المستخلص العشبى على عامل الوزن لعينة النساء البدينات في مدينة الرمادي

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الخلاصة:

تم دراسة تأثير مستخلص عشبي مكون من نباتات (Salvia hispanica ، Avena sativa ، Cocos nucifera ، Citrus sinensis ، Elettaria Cardamomum ، Sesamum indicum ، على 41 امرأة (مجموعة المعاملة) تعاني من السمنة المفرطة بمتوسط عمر (20–40) سنة في مدينة الرمادي، كانت الجرعة عبارة عن خليط من النباتات المذكورة سابقاً بمقدار 20 غراماً يومياً، مقارنة بـــ 20 امرأة (مجموعة المعاملة) تعاني من السمنة المفرطة بمتوسط عمر (20–40) سنة في مدينة الرمادي، كانت الجرعة عبارة عن خليط من النباتات (محموعة المعاملة) تعاني من السمنة المفرطة بمتوسط عمر (20–40) سنة في مدينة الرمادي، كانت الجرعة عبارة عن خليط من النباتات المذكورة سابقاً بمقدار 20 غراماً يومياً، مقارنة بـــ 20 امرأة (مجموعة التحكم) لم يتم إعطاؤهن المستخلص. اتبعت جميع النساء نظاماً غذائياً يتكون من (كربوهيدرات 50%، بروتين 30%، دهون 20%) استمرت التجربة لمدة 60 يوماً، تم خلالها حساب الوزن بعد 30 يوم و 60 يوم من المعاملة. وأظهرت النتائج عدم وجود فرق معنوي خلال فترة 30 يوما، في حين كان هناك فرق معنوي واضح خلال فترة 30 يوما. بلغ إجمالي فقدان الوزن للنساء في معاملة. وأظهرت النتائج عدم وجود فرق معنوي خلال فترة 30 يوما، ما يعني واضح خلال فترة 50 يوم و 50 يوم من المعاملة. وأظهرت النتائج عدم وجود فرق معنوي خلال فترة 30 يوما، من حين كان هناك فرق معنوي واضح خلال فترة 30 يوما. بلغ إجمالي فقدان الوزن للنساء في مجموعة العراح (1.11 كجم) مقارنة بمجموعة التحكم (5.37 كجم)، مما يعني أن معدل فقدان الوزن للنساء في مجموعة المعاملة كان أكثر من الضعف مقارنة بمجموعة التحكم، وهذا الخليط العشبي في إنقاص الوزن.