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Influence of Apple Cider Vinegar on Weight Reduction of Females in Karbala City



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ABSTRACT

Introduction: Obesity is a worldwide disease affecting the population in all countries and it is regarded as a risk factor for many chronic diseases. In last years, apple cider vinegar has been singled out as an especially helpful safe remedy for the management of obesity. It has been more popular in recent years for the reduction of weight even without showing evidence of medical benefits. **Objectives:** the study aims to determine the influence of apple cider vinegar consumption among females on their weight reduction. **Patients & Methods** this An Interventional-clinical trial study included 24 female aged 30-71 years and was carried out in endocrine clinics of Imam Al- Hussain medical city and Imam Zain Al- Abiden hospital in Karbala city which were convenient sample, from the beginning of April to the end of August 2020. Measurements of body mass index and waist circumference were done for all females of the studied group at the beginning of the study and one month after consumption of 15ml of apple cider vinegar with the lunch. **Results:** The results showed that After one month of intake of apple cider vinegar in vinegar treated women, there was a significant reduction in body mass index level($p=0,0001^*$), and a significant reduction of waist circumferences. ($p=0.0001^*$). **Conclusion:** Apple cider vinegar reduce body mass index and waist circumference **Recommendation:** Apple cider vinegar if used regularly with a meal can reduce body weight.



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INTRODCUTION

In last years, apple cider vinegar has been singled out as an especially helpful safe remedy. It has been widely used in various dosage forms in alternative medicine for several conditions such as diabetes and obesity [1].

Obesity characterized by increased cardiovascular risk factors such as hypertension, dyslipidemia, and glucose intolerance [2].

Anti-obesity drugs are commercially available for use in weight control and weight reduction, but undesirable side effects have made it difficult for obese patients to achieve long-term maintenance of weight loss, also many patients do not respond adequately to the therapies [3].

Obese individuals are more likely to use alternative products or dietary supplements for reduction of their body weight and to gain other beneficial metabolic effects [4].

Diets enriched with natural antioxidants such as apple cider vinegar showed beneficial effects on oxidative stress, blood pressure, and serum lipid composition [2].

Apple cider vinegar is made from fermented apple juice, it contains minerals, vitamins, enzymes, pectin, antioxidant, and malic acid [5].

There is a general lack of research investigating the effects of apple cider vinegar, some Studies have shown that vinegar supplementation increases satiety after eating a high-carbohydrate meal containing bread [6].

The usage of apple cider vinegar should not be discounted by healthcare professionals now that it is becoming increasingly popular, especially for those whose have obesity or chronic diseases [7].

Many healthful benefits of apple cider vinegar are attributed to polyphenols, such as antioxidant, anti-allergic, anti-inflammatory, so it may affect obesity which is considered an inflammatory disease [8].

Some scientific investigations demonstrated the benefits of vinegar, such as antimicrobial properties [9].

Adding a tablespoon of apple cider vinegar (ACV) into a glassful of water and drinking it every day acts as a potential weight loss booster along with numerous other benefits. Several

mechanisms have been proposed to explain these metabolic effects, including delayed gastric emptying [5].

Apple cider vinegar (ACV) along with a reduced-calorie diet (RCD) can be considered as an effective strategy for reducing anthropometric parameters, appetite in overweight or obese individuals [10].

Apple cider vinegar (ACV) as one of the herbal products is remarkably more regarded for its beneficial effects [11].

The mechanism of the action of Apple cider vinegar (ACV) and its significance remains to be elucidated in future investigations [1].

Due to the limited number of studies on the effects of apple cider vinegar, especially on humans, this study is aimed to investigate the effect of vinegar on weight reduction.

Aim of the study:

-To determine the influence of apple cider vinegar consumption among females on weight reduction.

MATERIALS AND METHODS:

An Interventional-clinical trial study, it was done from 2nd of April to 30th of August 2020 and was conducted among overweight or obese females whose attending the endocrine clinics of Imam Al- Hussain medical city and Imam Zain Al- Abiden hospital.

The convenient sample size for the study was 24 participants, they were overweight or obese females, ages 30-71 years.

The study group were instructed not to change any of their lifestyles and were asked to consume 15 ml of apple cider vinegar in 200 ml water with lunch meal for one month, waist circumferences (WC) (a measurement taken around the abdomen at the level of umbilicus), body mass index (BMI) (a person's weight in kilograms divided by the square of height in meters) [12] were assessed before and one month after the starting of the study.

Those who were overweight (body mass index ≥ 25) or obese (body mass index ≥ 30) [12] females aged more than 20 years and did not have any vinegar intolerance, gastrointestinal,

hepatic, renal, cardiovascular and asthma disease were included in the study, while smoker, alcoholic or unwilling females to participate in the study were excluded.

Ethical approval on study conduction obtained from the Council of the Arab Board for Health Specialization and Karbala Health Directorate. Verbal consent was taken from each participant before participating in the study with a brief explanation of the objectives of the study.

The data were analyzed using (paired-sample t-test) in SPSS version 21 and were expressed as mean \pm SD of the mean, probability level less than 0.05 indicate significant difference.

RESULTS

Twenty four females with an age range between 30 to 71 years old, were enrolled in the study. All of them were from an urban area, with moderate socioeconomic status, married, and with secondary school and above educational level.

Fourteen of the females (58%) were obese while 10 of them (42%) were overweight figure (1).

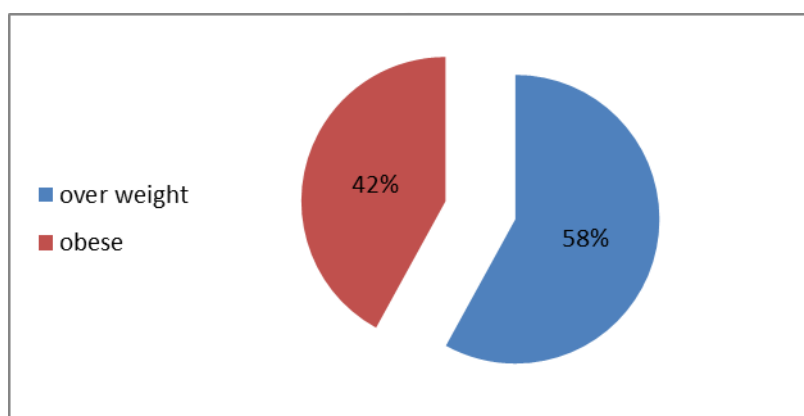


Figure No. 1: the distribution of the study groups according to their BMI

The mean (\pm SD) of BMI was 31 (\pm 4.9) before intervention and 30.17 (\pm 4.87) after intervention, also for WC was 102.29 (\pm 13.7) before the intervention and 99.38 (\pm 13.36) after it. (Table 1).

Table No. 1: The mean and stander deviation of BMI and WC before and after the intervention.

Variable	Before intervention	After intervention
	Mean \pm SD	Mean \pm SD
Body mass index (BMI)	31.01 \pm 4.92	30.17 \pm 4.87
Waist circumference (WC)	102.29 \pm 13.72	99.38 \pm 13.36

After one month of intake of apple cider vinegar in vinegar treated women, there was a significant improvement in body mass index level ($p=0,0001^*$), and significant reduction of waist circumferences . ($p=0.0001^*$). (Table 2).

Table No. 2: Effect of apple cider vinegar on body mass index at the beginning of the study and the end of the treatment after 30 days. $p<0,05$ is considered statistically significant.

Variable	Before intervention Mean \pm SD	After intervention (Mean \pm SD)	Mean difference \pm SD	95% CI	P-value
BMI	31.01 \pm 4.92	30.17 \pm 4.87	0.85 \pm 0.22	0.75-0.94	0.0001*
WC	102.29 \pm 13.72	99.38 \pm 13.36	2.92 \pm 1.82	2.15-3.68	0.0001*

DISCUSSION:

Obesity is worldwide disease affecting the population in all countries and it is regarding as a risk factor for many chronic diseases [11].

Few studies have investigated the effect of apple cider vinegar on weight reduction some of them have proved the positive effect [13].

It was observed that apple cider vinegar significantly reduce the body mass index (P Value= 0.0001*) and waist circumference (P-Value = 0.0001*) of overweight and obese females after 30 days of apple cider vinegar consumption without changing any of their lifestyle (Table 2).this reduction of visceral fat can be explained by delay gastric emptying and feeling of

satiety and the improvement of insulin sensitivity. Also may be due to the antioxidant effect of apple cider vinegar on obesity which is considered a chronic inflammatory disease [2].

The results of this study are similar to another study of Ben Hmad et al, in Tunisia, 2017 and of Becir Heljic et al, in Sarajevo, 2014 which find that apple vinegar has an important role in the reduction of waist circumference WC and body mass index BMI [11],[13].

Acetic acid was considered to be the active ingredient in vinegar that affects body fat reduction and body weight gain [14].

CONCLUSION:

There is a significant effect of apple cider vinegar on the reduction of waist circumference and body mass index.

Recommendation:

Apple cider vinegar if used regularly with meal can reduce body weight.

Limitations of the study:

Limited time, no fund, the pandemic of covid 19 and limited number of females who were willing to participate in the study, all these factors were affected the sample size of the study.

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