

EFFECT OF JAPAN WATER THERAPY INFUSED WITH CINNAMON ON BODY WEIGHT, WAIST/HIP RATIO, AND BODY MASS INDEX OF OVERWEIGHT AND OBESE SUBJECTS

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ABSTRACT

Objective: The objective of this study was to discover the effect of Japan water therapy with cinnamon on body composition in overweight and obese subjects.

Methods: The study was conducted with 36 subjects divided into three groups, namely, Group A – water therapy with cinnamon (n=12), Group B – water therapy (n=12), and Group C – warm water (n=12), where Groups A and B were test groups and Group C was a control group. This study was carried out for 8 weeks. Body weight, waist/hip ratio (WHR), and body mass index (BMI) were measured every 15th day. Data were statistically analyzed by mean, standard deviation, and paired t-test using Getcalc.com

Results: Out of all the groups, Group A showed desirable reduction in weight, WHR, and BMI, but statistically it was non-significant on WHR. Similarly, Group B had non-significant result with content to WHR but showed a moderate reduction in all categories. However, Group C as a control group both had either constant or minimal reduction in WHR and BMI being statistically non-significant.

Conclusion: The findings of the study concluded that consumption of Japan water therapy with cinnamon helps in reduction of weight, WHR, and BMI within 8 weeks. Plain water therapy only had a moderate effect on reducing body composition in the same duration of time.

Keywords: Obesity, Japan water therapy, Cinnamon, Waist/hip ratio, Body composition.

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INTRODUCTION

The current obesity epidemic in adults and children is a major public health concern worldwide. Obesity and its effect on the metabolic changes leading to disorders in the human body, such as diabetes, hypertension, and cardiovascular diseases in addition to chronic diseases such as stroke, osteoarthritis, sleep apnea, some cancers, and inflammation-based pathologies. In recent years, obesity has been considered a serious socioeconomic issue, which has become one of the major health problems all over the world, affecting people of all ages, sex, ethnicities, and races [1]. This study was done to determine the relationship between water therapy infused with cinnamon and obesity.

Drinking water is of course generally good for health and drinking plenty of water is recommended in a weight-loss regimen. A study reviewed that drinking water instead of any caloric beverages may help in promoting weight loss by eliminating beverage calories and also lowers total energy intake. Absolute and relative increases in drinking water were associated with decreases in body weight, waist circumference (WC), and percent body fat in overweight women assigned to four popular weight-loss diets [2].

Water therapy is one of the famous Japanese practices that help with weight loss and fitness. It includes drinking warm water early in the morning that helps in removing toxins from the stomach and improves health, thereby making the body energetic [3].

The therapy recommends drinking water after waking up in early morning as these morning hours are considered to be “golden hours,” and it is measured that drinking water during this period not only promotes weight loss by smoothening your digestive system but also helps in treating various health problems [3].

Warm water purifies and flushes the toxin, improving blood circulation, helps melting the fat deposits, and destroys harmful bacteria in our body. It is the most important catalyst in losing weight and maintaining a perfect body figure because it increases body temperature, resulting in a faster metabolism [4].

The cinnamon (*Dalchini*, in Hindi) is one the most important and popular spices used worldwide. Cinnamon is not only used in the kitchen for cooking but also used in traditional and modern medicines [5,6]. The numerous nutritional composition of cinnamon has been shown in Table 1. The major components present in cinnamon include cinnamaldehyde, eugenol, coumarin, and cinnamic acid [7]. However, the leaves and stem barks have been reported to be the main source for biological activities displayed by *Cinnamomum* species. One of the most widely investigated constituents of *Cinnamomum* species is essential oil and reported to exhibit wide array biological activities including antibacterial, antifungal, antioxidant, antidiabetic, antitermitic, anticancer, anticholinesterase, larvicidal, hypouricemic, immune

Table 1: Nutritional composition of cinnamon

Nutrients	As per serving one tablespoon
Calories (in 6.8 g)	17
Protein (in 6.8 g)	0.3 g
Total fat	0.2 g
Saturated fat	0
Carbohydrate	5.5 g
Sugar	0.1 g
Dietary fiber	3.6 g
Vitamin A	20%
Vitamin C	12%

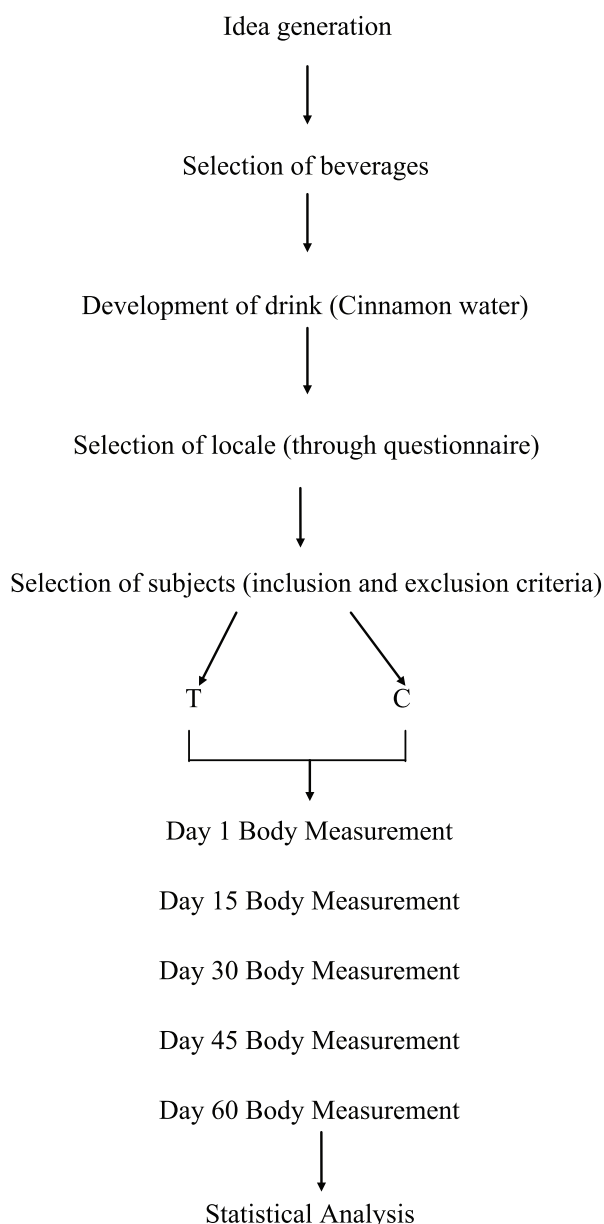
It also contains high amount of other vitamins such as zinc, potassium, magnesium, iron, and calcium. Source – Maheshwari *et al.*, 2013 [10]

modulatory, and xanthine oxidase inhibitory activities [8]. Water-soluble cinnamon extract, standardized for polyphenolic type-A polymers, can favorably alter systolic blood pressure and body composition [9].

With numerous health benefits, cinnamon being naturally occurring spices also helps in reducing weight. To examine the same, a research study was done to establish the effect of cinnamon on obesity, the study proposed samples to have 5 g of cinnamon containing tea with honey for 2 weeks. The findings of this study depict that the prescribed cinnamon tea resulted in an improvement weight reduction [11].

METHODS

The idea of Japan water therapy was generated from the website [4] and idea of cinnamon was generated by exploring literature review. The drink was developed by the following guidelines of Japan water therapy by infusing 3 g cinnamon bark in the form of powder in it [12]. Demographic profile, anthropometric measurements (body weight, waist/hip ratio [WHR], and body mass index [BMI]), food liking and disliking, 24 h dietary recall, and food frequency table were collected by self-formulated questionnaire. The samples who met the inclusion and exclusion criteria were selected by purposive sampling technique.



Inclusion criteria

The following criteria were included in the study:

- Subjects aged between 25 and 35 years
- Subjects with BMI 23
- Subjects with weight more than 70 kg
- Subjects with WHR more than 0.80
- Subjects doing physical activity for at least 30 min.

Exclusion criteria

The following criteria were excluded from the study:

- Subjects with no physiological problem
- Subjects taking no medication
- Subjects allergic to cinnamon.

The study was conducted with 36 subjects divided into three groups, whereas Group A – water therapy with cinnamon (n=12), Group B – water therapy (n=12), and Group C – warm water (n=12). However, Groups A and B were test groups and Group C was a control group. The duration of the study was 8 weeks. Subjects received 3 g cinnamon powder every 15th day, and for further examination, they were assigned to drink water as per there groups being allotted. Every 15th day, the body composition was measured. After the 60th day, the statistical analysis was done by putting mean, standard deviation, and paired t-test to find out the statistical significance.

RESULTS AND DISCUSSION

Table 2 shows significantly superior decrease among all the three groups, but the difference was more impressive in water therapy infused with cinnamon, i.e., Group A. Weight reduction was moderate in Group B, whereas in Group C, the reduction was very minimal for the same duration of time as compared to other groups.

From Table 3, it can be evident that there was change in WHR among all the groups, but the value was non-significant, this can be due to the short duration of the study, if the water therapy taken with either cinnamon or without cinnamon can result in a significant reduction.

Table 4 depicts that BMI reduction was significant in both test Groups A and B. In Group C, the reduction was very less as compared to the other two groups and even the result was also non-significant in the same group.

DISCUSSION

The findings of the study revealed that drinking excessive warm water over and above daily intake as per Japan water therapy, and then, considerable weight loss among subjects can be seen; this can be due to the effect of warm water that helps in increasing metabolic rate that will promote burning calories quickly. A similar study was done on overweight girls to see the effect of water-induced thermogenesis and suggested that there was a decrease in body weight, BMI, and body composition scores which were seen in overweight subjects who establish the role of water-induced thermogenesis that is helping in increasing the metabolic rate in weight reduction of overweight subjects [13].

The finding of this study revealed Group A that was given water therapy with cinnamon shown a considerable reduction, especially in weight, which proves that both water therapy and cinnamon help in reducing weight as compared to other groups. This can be due to the addition of cinnamon into water therapy, as cinnamon also shown to be promoting weight loss.

Consequently, a previous study conducted the study to see the effect of 300 mg/kg body weight for 3 weeks of cinnamon extract and its components and showed beneficial effects essentially on all factors associated with metabolic syndrome, including insulin sensitivity action, glucose, lipid, antioxidants, inflammation, blood pressure, and body weight [14].

Another study also showed the role of cinnamon in reducing weight where 3 g cinnamon was given for 16 weeks and their parameters showed that significant improvement was observed in body weight, hyperglycemia, total adiposity, and serum lipids level and concluded

Table 2: Mean and standard deviation of weight on water therapy with cinnamon, water therapy, and warm water intervention of the subjects (n=12)

Category	Days	Day 1	Day 15	Day 30	Day 45	Day 60
Water therapy With cinnamon	80.2±6.59	79.6±6.43	77.6±6.26	75.9±6.32	74.7±6.38	2.01*
Water therapy	77.6±4.7	77.2±4.61	76.1±4.7	75.5±4.59	74.7±4.51	3.14*
Warm water	82.7±5.4	82.3±5.3	81.6±5.4	80.8±5.5	80±5.74	5.49*

*p≥0.69

Table 3: Mean and standard deviation of waist/hip ratio (WHR) on water therapy with cinnamon, water therapy, and warm water intervention of the subjects (n=12)

Category	Days					p-value
	Day 1	Day 15	Day 30	Day 45	Day 60	
Water therapy with cinnamon	0.96±0.08	0.95±0.9	0.94±0.09	0.92±0.09	0.90±0.09	0**
Water therapy	0.95±0.04	0.94±0.52	0.92±0.53	0.92±0.51	0.91±0.51	0.18**
Warm water	0.96±0.05	0.95±0.04	0.94±0.04	0.94±0.03	0.93±0.04	0.08**

**p≥0.69

Table 4: Mean and standard deviation of body mass index on water therapy with cinnamon, water therapy, and warm water intervention of the subjects (n=12)

Category	Days					p-value
	Day 1	Day 15	Day 30	Day 45	Day 60	
Water therapy with cinnamon	28.1±1.67	27.5±1.59	27.1±1.57	26.6±1.56	25.9±1.53	1.31*
Water therapy	27.2±1.64	27.1±1.6	26.5±1.63	26.2±1.62	25.6±1.6	0.72*
Warm water	27.4±1.71	27.2±1.72	27±1.73	26.8±1.73	26.6±1.78	0.54**

*p≥0.69, **p≤0.69

that the single supplement of cinnamon can help in all components of metabolic syndrome [12].

The results of plain water therapy also made a moderate and significant difference in weight; it can be concluded that following the guidelines of Japan water therapy can make a difference in weight, even in a small duration of time. A person who is allergic to cinnamon or does not prefer cinnamon can try plain water therapy for weight reduction and many more diseases for healthy living.

However, when it comes to control group, drinking warm water as per their comfort could not make a much difference in weight, BMI, and WHR.

The remarkable reduction in WHR was also noticed among the subjects as it can be seen from the table of mean and standard deviation, but there was no significant difference among all the three groups in all the three categories.

On the contradictory, this study showed the reduction even on WHR. The study was conducted between cinnamon capsules and placebo on metabolic profile and body composition, and the result showed that the mean weight and BMI were higher in the cinnamon group as compared to the placebo group and cinnamon capsules result in significant decrease in weight, WC, and WHR, as compared to the placebo group in sample of Asian Indians in North India [12]. This difference can be due to the duration of the study, which was 8 weeks less as compared to the other study in regard to WHR.

Recent findings also revealed that BMI of subjects was also reduced from the table. All the three groups had a difference in reduction on their BMI, but the significant difference came out in Groups A and B that were water therapy with cinnamon and plain water therapy, respectively. This can be due to the properties of cinnamon and warm water as per guidelines of Japan water therapy.

This study also says that consuming 500 mg/day of a specific aqueous extract of cinnamon (Cinnulin PF®) for 12 weeks leads to minor

but statistically significant improvement in body composition from Cinnulin PF® supplementation. The study also concluded significant improvements in metabolic syndrome that is systolic blood pressure, fasting blood sugar, and body composition [9].

The BMI result was non-significant in Group C and the reason of non-significance can be due to not drinking the consistent amount of water. The difference was either remained constant or the reduction was very minimal controlled group in any of the body composition in either of the category.

CONCLUSION

Obesity is one of the greatest threats among the urban population. Even a modest weight loss can significantly reduce the morbidity and mortality, which are associated with it. Obese people can reduce weight by homemade treatment which can be easily available in their kitchen and inexpensive. In the present study, an attempt was made to determine the effect of relationship between water therapy infused with cinnamon, water therapy, and warm water drinking on overweight or obese subjects, in terms of weight loss, WHR, and BMI. The study concluded that water therapy infused with cinnamon helps in weight reduction and BMI by thermogenesis and addition of cinnamon. The result was seen in WHR but needs to follow in the long run. Even, if a person does not like cinnamon or allergic to cinnamon can follow only water therapy as it also showed reduction, but in less amount as compared to water therapy with cinnamon. No major reduction was seen in people drinking warm water as per their convenience and not following a constant amount of drinking water. This cost-free intervention and homemade treatment may be useful in treating overweight and obese individuals for attaining an increase in energy expenditure and healthy lifestyle.

AUTHORS' CONTRIBUTIONS

Both the authors designed the study. Shivani Bhatia carried out the experimental work, drafted, and edited the manuscript. Dr. Shubhra Saraswat supervised the study, edited, and finalized the manuscript.

CONFLICTS OF INTEREST

The authors have no conflicts of interest to declare.

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