

## Weight and Waistline Reduction in Women after Massage with Cream Containing Medicinal Plant Extract

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### ABSTRACT

*Excessive fat deposit in adipose tissue could impair health. Several methods are recommended to manage this health problem but they are not absolutely effective. An alternative or complementary method may be necessary. Therefore this study aimed to investigate whether massage with herbal cream could reduce fat deposit. This one-group experimental study was conducted in Chiang Mai, Thailand in 2004. The intervention was the once-a-day massage for five consecutive days with cream containing medicinal plant extract. The measurements investigated were the weights (kilogram) and waistlines (inch) of woman subjects (n=29) before and after the intervention. The results showed that massage with herbal cream could reduce the weight from 58.96 to 58.43 ( $p < .001$ ) and the waistline from 33.96 to 30.94 ( $p < .001$ ). This investigation suggested that massage with herbal cream could reduce weight and waistline of women, thus could be used as an alternative or complementary practice to reduce fat deposit in abdominal adipose tissue.*

**Key words:** Weight reduction, Waistline reduction, Massage, Herbal cream, Women

### INTRODUCTION

Excessive fat deposit in adipose tissue could impair health (Caterson and Gill, 2002). Several methods are recommended to manage this deposit, such as exercise, diet and use of medicine. However, these methods are not absolutely effective. An alternative or complementary practice may be required to solve this health problem. People employ the massage therapy as a conventional medicine for health care for a long time ago. Currently, they still apply it to manage their health-related problems, not only in developing countries but also in developed ones. United States people use several complementary and alternative medicines, including the practice of massage therapy, for health purposes (Barnes et al., 2004; Honda and Jacobson, 2005). The massage therapy has continued to increase in use due to the fact that several studies have shown the benefits of this practice. The course of massage by mother and professional could result in weight gain in preterm infants (Ferber et al., 2002). Similarly, the massage by mother could improve the growth of newborn infants, i.e., weight, length and head circumference (Field et al., 2004). Furthermore, the foot and hand massage could reduce postoperative pain (Wang and Keck, 2004). The practice of massage therapy could also relieve the symptoms of carpal tunnel syndrome (Field et al., 2004) and Parkinson's symptoms (Reif et al., 2002). Constipation is also a health problem and the use of massage therapy can reduce the symptom (Preece, 2002). In addition, the massage therapy could improve the cancer symptoms of patients (Cassileth and Vickers, 2004). Besides the evidence supporting the effectiveness to improve health problems, massage therapy is non-invasive, inexpensive, easily practical and quite safe. Injury from massage was reported in a very low case (Grant,

2003). Moreover, there is a tendency to incorporate massage therapy into a research competency (Hymel, 2003; 2005). These previous reports indicate the development of massage therapy in health care. Since the practice of massage therapy is employed in various health purposes and excessive fat deposit is also a health problem, therefore, this study concerned such practice as an alternative method to reduce the fat deposit. Additionally, Thai people also employ massage as a traditional therapeutic method for health problem.

Thai people use capsicum and ginger as food and as herbal medicine for gastrointestinal regulation (Maneekul and Sumranjit, 1998). However, there are studies concerning other therapeutic effects of these herbs. Topical use of capsicum plaster could relieve non-specific low back pain (Frerick et al., 2003). It was found that ginger extract could be used as a lipid-lowering agent (Thompson et al., 2002). Besides the two herbs, *Ginkgo biloba* is a well-known medicinal plant orally used for various health benefits in Asia, America and Europe. Many studies have examined its therapeutic efficacy. An investigation has shown that its extract could lower the lipid level (Yao et al., 2004). Based on these previous findings, this study expected that massage with cream could decrease fat deposit. As a result, the study objective was to determine the effect of massage with cream containing these herbal extracts on weight and waistline of woman subjects. The hypotheses were H 1: massage with herbal cream could reduce the weights of woman subjects and H 2: massage with herbal cream could reduce the waistlines of woman subjects.

## MATERIALS AND METHODS

### Study design

This one-group experimental study was conducted in Chiang Mai, Thailand in 2004. The intervention was the five-consecutive day massage with herbal cream to reduce weight and waistline of woman subjects. The measurements of weight and waistline before and after the intervention were compared to determine the effect of the intervention. The paired t-test analysis was used to analyze the data at the significant level of 0.05.

### Participant recruitment

Woman participants were recruited from an announcement of the program persuading women who wanted to reduce their weight and waistline by massage with herbal cream. The program requested that participants should have enough time to engage in the five-consecutive day study without payment. The expected benefit participants would obtain was the reduction in weight and waistline. Women accepting this request contacted the staff in order to make the appointments of participation. An interview for screening the applicants was conducted to include women eligible for the study. Criteria used to select the participants were having no pregnancy, no use of anti-obesity substance or course before or during the program and no serious disease. After interviewing, the staff informed the participants about the objective and procedure of the program. When participants knew and understood all information clearly, they filled the necessary information about their physical data, health status and eating habit in the application form and gave their signature of consent. Initially, there were 30 participants selected but one participant dropped out one day because of having no time. As a result, there were 29 participants analyzed in this study.

### Measurements

Each subject was measured for weight (kilogram, kg.) and height (centimeter, cm.). Body Mass Index (BMI), defined as weight in kilogram divided by the square of height in meter, was calculated for each subject. Waistline (inch) was measured by a standard measure

belt before and after every massage. Waistlines were determined at two points. The first was measured along the circumference passing the navel and referred to as “lower waistline”. The second was measured along the circle above the navel two inches, namely, “upper waistline”. The outcome measurements were the weight reduction (difference in weight on day 1 and day 5), daily reduction in waistline (average difference in waistline on day 1 through day 5) and total reduction in waistline (difference in waistline on day 1 and day 5).

**Material**

The cream for massage contained these main ingredients: the extract from capsicum, ginger, *Ginkgo biloba*, citric acid, glyceryl monostearate, PEG-4-ceteth-20, benzoate esters, tocopheryl acetate, propylene glycol and menthol.

**Massage procedure**

Each subject was given one massage with cream (100 gm.) in each day during the program by a well-trained masseuse. Before starting, the subjects had to prepare their clothes comfortable for massage. In a clean room, they then lay down on the bed in a relaxed manner and put their hands over the heads in order not to interfere with the masseuse during massage. The masseuse applied each portion of the cream and gently rubbed it in with two hands on the waist area. She massaged the cream in a circular direction around the waist area and along the waist circle alternatively until the cream was used up. Each massage took about fifty minutes. Then, she cleaned and dried the waist by some water and a small towel. Subjects lay down for a while (5–10 minutes) before getting up.

**RESULTS**

**Physical data of subjects**

Physical data of subjects included age, weight, height and BMI (Table 1). The means were about 38 years, 58 kg, 155 cm and 24 kg/m<sup>2</sup> respectively.

**Table 1.** Physical data of subjects.

	Minimum	Maximum	Mean	SD
Age (year)	20	55	38.52	8.41
Weight (kg.)	48	79	58.96	7.78
Height (cm.)	145	166	155.46	5.12
BMI (kg/m <sup>2</sup> )	19.72	33.75	24.43	3.27

**Weight reduction**

After massage, the mean weight of subjects was significantly reduced about a half of kilogram from 58.96 to 58.43 kg. (Table 2). This result supported the Hypothesis 1 that massage with herbal cream could reduce the weights of woman subjects

**Table 2.** Weight reduction after massage with herbal cream.

Day	Mean weight (kg.)	SD	Mean difference	p
Day 1	58.9655	7.7811	.5310	<.001
Day 5	58.4345	7.5823		

### Lower waistline reduction

Massage with herbal cream could also reduce the lower waistlines of almost all subjects in everyday. There was only one subject whose lower waistline on day 4 did not change. The daily reduction varied from 0.43 to 1.73 inches with the mean of 0.94 inch while the total reduction ranged from 0.38 to 5.25 inches with the mean of 3.02 inches (Table 3). On day 1, the lower waistlines varied from 28.5 to 40 inches with the mean of 33.96 while on day 5, the lower waistlines ranged from 26.5 to 38.7 inches with the mean of 30.94 inches. The mean difference of 3.02 inches was significantly different (Table 3). This result indicated that the intervention could reduce the lower waistline of subjects about 3 inches. As a result, this finding supported Hypothesis 2 that massage with herbal cream could reduce the waistlines of woman subjects.

**Table 3.** Lower waistline based on reduction type and day.

Reduction	Min	Max	Mean	SD		
Daily	.43	1.73	.9429	.3032		
Total	.38	5.25	3.0172	.2332		
Day				Mean difference	p	
Day 1	28.5	40	33.9569	2.6628	3.0172	<.001
Day 5	26.5	38.7	30.9397	2.7940		

### Upper waistline reduction

Massage with herbal cream could decrease the upper waistlines of almost all subjects in everyday. The daily reduction of all subjects varied from 0.28 to 1.58 inches with the mean of 0.67 inch. The total reduction of each subject ranged from 0.75 to 5.00 inches with the mean of 2.13 inches (Table 4). On day 1, the upper waistlines ranged from 26 to 36.5 inches with the mean of 31.16. On day 5, the upper waistlines ranged from 25 to 33.5 inches with the mean of 29.02 inches. The mean difference of 2.13 inches was significantly different (Table 4). This result supported Hypothesis 2 that massage with herbal cream could reduce the waistlines of woman subjects.

**Table 4.** Upper waistline based on reduction type and day.

Reduction	Min	Max	Mean	SD		
Daily	.28	1.58	.6700	.2754		
Total	.75	5.00	2.1346	.9130		
Day				Mean difference	p	
Day 1	26	36.5	31.1587	2.4255	2.1346	<.001
Day 5	25	33.5	29.0240	2.1538		

### Comparison of lower and upper waistline reduction

In addition to the findings that massage with herbal cream could reduce both the upper and lower waistlines, this study also determined the degree of reduction between it. It was found that the reduction of lower waistline was significantly greater than that of the upper waistline (Table 5).

**Table 5.** Comparison of lower and upper waistline reduction.

Reduction	Mean	SD	Mean difference	SD	p
Daily, lower	.9429	.3032	.2540	.2085	<.001
Daily, upper	.6700	.2754			
Total, lower	3.0172	1.2332	1.0048	1.2716	<.001
Total, upper	2.1346	.9130			

### DISCUSSION

The results showed that the five-consecutive day massage with cream containing medicinal plant extract could significantly reduce the weights and waistlines of woman subjects. This preliminary finding indicated the possibility to use massage with herbal cream as an alternative or complementary practice to reduce fat deposit, especially in abdominal adipose tissue. It was reported that the abdominal adipose tissue, the main site of thermogenic brown adipose tissue, had a high lipolytic activity (Dewailly et al., 1998; McCarty, 2001). Since the cream contained hot medicinal plants, i.e., capsicum and ginger, it could give hot effect. Therefore it could be explained that the reduction of weight and waistline could be due to the hot effect of the herbal cream resulting in fat lipolysis. This effect could result in triglyceride lipolysis in abdominal adipose tissue. However, further studies are necessary to obtain more information to confirm the use of massage with herbal cream and its action.

World Health Organization uses BMI, the most useful indicator of total adiposity, to define obesity. People having BMI of 18.5-24.9, >25 and >30 are classified as normal, overweight and obese respectively (WHO, 2000). According to this classification, some subjects were overweight (n=12) and one subject was obese. From interviewing, these subjects wanted to reduce their weights and waistlines because they felt inconvenient and uncomfortable when moving and knew the plausible danger of overweight and obesity. Though most of the subjects were normal (n= 16), they said that they tended to easily gain weight. A touchable sign of this tendency was a larger waistline. All subjects had similar thoughts that more weight gained and larger waistline made them less slim, less active, less fit and especially, less beautiful. These reasons led them to participate in this investigation and expected for the reduction of weight and waistline.

There are several methods to determine the body adiposity such as computerized tomography, magnetic resonance imaging and X-ray absorptiometry (Caterson and Gill, 2002). But this study used the measurements of weight and waistline because it is the easiest method to determine the abdominal adiposity. As well, waistline is the most common indicator for measuring abdominal adipose tissue (Dewailly et al., 1998). In addition, some previous investigations employed the weight and waist circumference as indicators of adiposity (Savage et al., 2003; Valsamakis et al., 2004).

### **Limitations**

The study could not select only overweight or obese subjects due to time constraint of five-consecutive day participation with no payment. Two-group design seemed to be more appropriate, but this study was necessary to employ one-group design because there was no beneficial expectation (reduction in weight and waistline) or incentive (money payment) for control group.

### **Suggestions**

Since this study investigated the effect of massage with herbal cream on abdominal adipose tissue, next study should determine other regions, such as thigh adipose tissue, in order to compare the effect of it. A longer period should be conducted to see massage effect in longer duration.

## **CONCLUSION**

Massage therapy has continued to develop in professional use for several health problems including excessive fat deposit. Massage with cream containing medicinal plant extract could reduce weight and waistline of women. This practice of massage could be used as an alternative or complementary method to manage excessive fat deposit especially in abdominal adipose tissue.

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