



## Research Article

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### EFFECT OF CONSUMPTION KEMUNING'S LEAF (*MURRAYA PANICULATA* (L.) JACK) INFUSE TO REDUCE BODY MASS INDEX, WAIST CIRCUMFERENCE AND PELVIS CIRCUMFERENCE ON OBESE PATIENTS

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#### ABSTRACT

Obesity has reached epidemic proportions the world, with more than 1 billion adults are overweight and 300 million of them in clinically is obese that a major contributor to the burden of chronic disease and disability globally. Determining the classification of obesity can be determined by measuring the body mass index (BMI), waist circumference or pelvis circumference. Consumption of herbal drugs have excess minimal side effects than chemical drugs. Examples of herbs used for weight loss is kemuning leaves (*Murraya paniculata* (L.) Jack) infuse. The study was to determine differences in BMI, pelvic circumference, waist circumference and pelvic waist circumference ratio (waist pelvis ratio) before and after administration of kemuning leaves infuse in obese patients. The method is quasi experimental with by one group before and after design. Population in this study was all obesity employees in University of Lampung. There were 17 sample taken from population with consecutive sampling technique. The result showed the mean BMI was  $30.33 \pm 4.61$  kg/m<sup>2</sup> and  $29.67 \pm 4.29$  kg / m<sup>2</sup>, pelvic circumference  $110.41 \pm 10.65$  cm and  $109.24 \pm 9.36$  cm, waist circumference  $94.65 \pm 10.04$  cm and  $96.06 \pm 9.90$  cm, and waist pelvis ratio of  $1.17 \pm 0.07$  and  $1.14 \pm 0.06$  before and after administration of kemuning leaves infuse for 15 days. There are differences between the mean BMI and waist pelvis ratio before and after giving kemuning leaves infuse ( $p=0.006$ ) and ( $p=0.037$ ), there are no differences between the mean pelvis circumference and waist circumference before and after giving kemuning leaves infuse ( $p=0.194$ ) and ( $p=0.278$ ) in obese patients at the University of Lampung.

**Keywords:** Body mass index, kemuning leaves, pelvic circumference, pelvic waist circumference ratio, waist circumference

#### INTRODUCTION

Obesity has reached epidemic proportions of World, with more than 1 billion adults with overweight and 300 million of them clinically Obesity is main contributors of chronic diseases and global disability. Obesity generated main risk for chronic diseases associated with serious diet, including type 2 diabetes mellitus, heart disease, hypertension and stroke, and certain form of cancer. Complications of this situation is also bad for health such as an increased risk of premature death and serious chronic conditions that reduce the entirety quality of life.<sup>1</sup>

Measurements by anthropometry, bioelectrical impedance analysis (BIA) or regional fat distribution can be used to determine obesity. Anthropometry that used is Body Mass Index (BMI) to measure weight compared with height, arm circumference, waist circumference or circumference of the pelvis.<sup>2</sup>

One of management of patients with obesity is therapeutic lifestyle modifications that increase physical activity and reduce the intake of calorie.<sup>3</sup> Another recommended way when the exercise and lifestyle modifications do not succeed is to use a weight loss drug. Many weight loss drugs that can be given as rimonabant, orlistat and sibutramine. Besides it, drugs is chemical material that has side effects for long time consumption is can give bad effect for health of the body

include nausea, insomnia, gastrointestinal upset and potentially toxic effects on the cardiovascular system and kidneys.<sup>4</sup>

Indonesia is one of country that has a wide range of plants. Therefore has the great potential to use plants to be used in traditional medicines (herbal). Traditional medicines (herbal) has advantages that does not owned by chemistry medicines is cheap, easy to get, minimal side effect and not harm the body.<sup>5</sup> Many plants can be used as a weight loss drug, such as kemuning leaves, *Jati belanda* leaves, green tea, lemon, turmeric, tamarind and others.<sup>6,7</sup>

Kemuning plant is also very easy to get in Indonesia because the plant is one of the ornamental plants that are found in the yard. The use in the community in infusion is more practical and cheap.<sup>8</sup> Based on the background, the authors are interested to research on the effect of consumption infuse of Kemuning leaves against a decrease in the mean BMI, waist circumference, pelvic circumference and Pelvic Waist circumference ratio (waist hip ratio) in obesity patients.

That study is carried out as per International conference of Harmonization-Good Clinical Practices Guideline (ICH-GCP) or as per Declaration of Helsinki guideline.

## MATERIALS AND METHOD

The research is using quasi-experimental research design. With the research methods one group pretest posttest design. This study was conducted at the Laboratory of Food Analysis Results Faculty of Agriculture and Laboratory Clinical Pharmacology, Faculty of Medicine, University of Lampung in November 2016 until December 2016.<sup>9</sup>

The study population is female employee of the University of Lampung which criteria have a BMI  $\geq 25$  kg / m<sup>2</sup>, female, age 25-50 years. With total samples of 17 people. Infuse consumed during 15 days with frequency 2 times a day after meals. Before giving infuse of Kemuning leaves, measured BMI, waist circumference and pelvis circumference of respondents. And after 15 days' consumption infuse of Kemuning leaves, measuring again BMI, waist circumference and pelvis circumference of respondents. To minimize refraction review because of influence from the intake of the different respondent's meals every day and not homogeneous physical activity, So respondents also requested to fill food recall and physical Activity questionnaire<sup>10,11</sup>

To make simplicia Kemuning leaves, the process is,

- (1) Take Kemuning leaves,
- (2) Separation of Kemuning leaves that have a fresh green color,
- (3) Washed from dirty until clean,
- (4) Drained and weighed,
- (5) Dried in the drying cupboard into simplicia,
- (6) Simplicia be mashed into simplicia powder,
- (7) Followed by weighing the powder simplicia be 15 gram
- (8) Heating water 480 ml of aquadest to boil,
- (9) Put in 1 sachet of simplicia powder,
- (10) Let it boil and water is 240 ml,
- (11) Filtered using filter paper,
- (12) kemuning leaves infusion is poured into a glass 240 ml. Make sure simplicia is dry and fully submerged. Later, boiled

for 15 minutes, from temperature 90 °C while stirring occasionally.<sup>7</sup>

Pelvic circumference is measured by,

- (1) Respondents were asked to stand up straight with both feet and weight equally on each foot,
- (2) Palpation and assign the area of major trochanter on the femur,
- (3) Wrap the measuring tape without pressure
- (4) Place the measuring tape at the maximum circumference of the buttocks, for women are usually at the level of the groin, while men usually about 2-4 cm below the navel,
- (5) Measure the circumference of your hips approach 0,1cm.

Waist circumference was measured with,

- (1) Respondents were asked in a polite way to open the top of the clothes or revealing clothes and touch the top of the last rib respondents to specify the measurement point,
- (2) Set a limit point edge most lower of ribs and the end point arc base of pelvic bone,
- (3) Set midpoint between the last rib point end point arc hucklebone / pelvis and mark the midpoint with stationery. Ask the respondent to stand upright and breathing normally (normal expiration),
- (4) Do abdominal circumference measurement initiated / taken from the midpoint then aligned horizontally around waist and belly back toward the midpoint of the beginning of the measurement,
- (5) If respondents have a fat belly down, taking measurements of the most bulging part and ends at the midpoint of the longer,
- (6) The tape measure should not be folded and measuring waist circumference near 0.1 cm.<sup>12</sup>

## RESULT

The result from measurements of BMI, pelvic circumference, waist circumference and waist hip ratio before and after giving kemuning leaves (*Murraya paniculata* (L.) Jack).

**Table 1: The mean body mass index before and after giving Kemuning leaves (*Murraya paniculata* (L.) Jack) infuse**

Variable	Total	Minimum	Maximum	Mean	SD
Body Mass Index <i>pre-test</i>	17	25.50	43.89	30.33	4.61
Body Mass Index <i>post-test</i>	17	25.75	43.52	29.67	4.29

In table 1 show BMI mean reduction from 30,33 $\pm$ 4,61 kg/m<sup>2</sup> to 29,67 $\pm$ 4,29 kg/m<sup>2</sup>, then do test for normality using the Shapiro-Wilk test with values (p <0.05), so data analysis using Wilcoxon test with p=0.006 (p<0.05) so that the significant decrease in BMI of statistical tests.

**Table 2: The mean pelvic circumference before and after giving Kemuning leaves (*Murraya paniculata* (L.) Jack) infuse)**

Variable	Total	Minimum	Maximum	Mean	SD
Pelvic circumference <i>pre-test</i>	17	98	137	110.41	10.65
Pelvic circumference <i>post-test</i>	17	96	131	109.24	9.36

In table 2 show mean pelvic circumference reduction from 110,41 $\pm$ 10,65 cm to 109,24 $\pm$ 9,36 cm, then do the test for normality using the Shapiro-Wilk test with values (p>0.05), so data analysis using paired T test with p=0.194 (p>0.05) so that the mean reduction in pelvic circumference is not meaningful in statistical tests.

**Table 3: The mean waist circumference before and after giving Kemuning leaves (*Murraya paniculata* (L.) Jack) infuse**

Variable	Total	Minimum	Maximum	Mean	SD
Waist circumference <i>pre-test</i>	17	81	122	94.65	10.04
Waist circumference <i>post-test</i>	17	85	126	96.06	9.90

In table 3 show mean waist circumference increasing from 94,65 $\pm$ 10,04 cm to 96,06 $\pm$ 9,90 cm, then do the test for normality using the Shapiro-Wilk test with values (p>0.05), so data analysis using Wilcoxon test with p=0.278 (p<0.05) so that the mean of increasing waist circumference is not meaningful of statistical tests.

**Table 4: The mean of ratio of the pelvic waist circumference before and after giving Kemuning leaves (*Murraya paniculata* (L.) Jack) infuse**

Variable	Total	Minimum	Maximum	Mean	SD
Ratio of the pelvic waist circumference <i>pre-test</i>	17	1.08	1.31	1.17	0.07
Ratio of the pelvic waist circumference <i>post-test</i>	17	1.04	1.25	1.14	0.06

In table 4 show ratio of the pelvic waist circumference mean reduction from  $1.17 \pm 0.07$  to  $1.14 \pm 0.06$  then do the test for normality using the Shapiro-Wilk test with values ( $p > 0.05$ , so data analysis using paired T test with  $p = 0.037$  ( $p < 0.05$ ) so that pelvic waist circumference mean reduction is meaningful of statistical tests.

## DISCUSSION

There is a similar study of the Kemuning leaves that claim to lose weight female mouse using a 50% water soluble fraction kemuning leaf extract at a dose of 585mg / kg and positive control group (mazindol) that capable of inhibiting the increase in body weight of mouse with a significance of  $p < 0.10$  the One-way ANOVA test compared to the negative.<sup>13</sup>

Pelvic circumference mean reduction obtained in the result but not meaningful in statistical tests of similar according to a patent that contains of a food composition have high safety and excellent in reducing body fat effects including weight gain and pelvic circumference is consumption foods from carotenoids or sphingolipid derived from the fruit and leaves that one of kemuning leaves (*Murraya paniculata* (L.) Jack).<sup>14</sup>

On the results seen a decrease in Ratio pelvic waist circumference is meaningful, ratio of the pelvic waist circumference is getting by dividing the length in pelvic circumference divided by waist circumference. Based on *food recall* questionnaire that filled more do not consume carbohydrates and fat, if we take a look from the intake of caloric needs of each individual. This causes the results of Ratio pelvic waist circumference mean and Body Mass Index is declined. It is also based on such research Rathnayake *et al* 2014 that high carbohydrate diets may increase prevalent of woman central obesity (Ratio of the pelvic waist circumference above 0.85).<sup>15</sup>

Daily food intake of the respondents assessed in this research using food recall. *Food recall* success collected for 15 days and produce a picture of the nutritional intake of different people. This method is selected because researcher find from previous research about validity of food recall in male and female in different age group. Female respondent reaches more accurate result than male.<sup>16</sup>

Physical activity also affect in weight management. Body Mass Index (BMI) in subjects who did not have a lot of activities found to be higher compared with subjects who do more physical activity. Lack of physical activity causes the body to make less use of stored energy. Physical activity plays a role in energy balance on overweight or obesity patients.<sup>17</sup>

## CONCLUSION

Based on result and discussion, so it can be concluded as first there is a decrease in the mean Body Mass Index (BMI) were significantly after giving kemuning leaves (*Murraya paniculata* (L.) Jack) infuse in obese patients, second there is a decrease in the mean pelvic circumference were not significantly after giving kemuning leaves (*Murraya paniculata* (L.) Jack) infuse in obese patients, third there was an increase in mean waist circumference after giving kemuning leaves (*Murraya*

*paniculata* (L.) Jack) infuse in obese patients, last there is a decrease in mean ratio pelvic waist circumference (waist hip ratio) were significantly after giving kemuning leaves (*Murraya paniculata* (L.) Jack) infuse in obese patients.

## REFERENCES

- WHO. WHO | Obesity and overweight [Internet]. World Health Organisation Media Centre Fact Sheet No. 311. 2012. [cited 2016 Nov 17] Available from: <http://www.who.int/mediacentre/factsheets/fs311/en/#.U2gDIH5zIZ4.mendeley>
- Winter DA. Anthropometry. In: Biomechanics and motor control of human movement. 4th ed. Chicago: Wiley; 2009. p. 82–106.
- Jacob JJ, Isaac R. Behavioral therapy for management of obesity. Indian J Endocrinol Metab. 2012;16(1):28–32.
- Cheung BM, Cheung TT, Samaranyake NR. Safety of antiobesity drugs. Ther Adv drug Saf. 2013;4(4):171–81.
- Radji M, Aldrat H, Harahapi Y, Cosphiadi I. Penggunaan Obat Herbal pada Pasien Kanker Serviks. J Ilmu Kefarmasian Indonesia. 2010;8(1):33–9.
- Pane M. Uji Efek Ekstrak Daun Kemuning (*Murraya paniculata* (L.) Jack) sebagai Penurun Kadar Kolesterol Darah Marmut Jantan (*Cavia cobaya*). Medan: Universitas Sumatera Utara; 2010.
- Permenkes RI. No. 6 Tahun 2016 tentang Formularium Obat Herbal Asli Indonesia. Jakarta; 2016. p. 6–225.
- Iswantini D, Rhoito F, Elizabeth M, Latifah K. *Zingiber cassumunar*, *Guazuma ulmifolia*, and *Murraya paniculata* Extracts as Antiobesity: *In Vitro* Inhibitory Effect on Pancreatic Lipase Activity. J Hayati Biosci. 2011;18(1):6–10.
- Dahlan S. Statistik untuk kedokteran dan kesehatan: deskriptif, bivariat dan multivariat dilengkapi aplikasi menggunakan SPSS. Jakarta: Epidemiologi Indonesia; 2014.
- Blom WAM, et al. Effects of 15-d repeated consumption of Hoodia gordonii purified extract on safety, ad libitum energy intake, and body weight in healthy, overweight women: A randomized controlled trial. Am J Clin Nutr. 2011;94(5):1171–81.
- World Health Organization. BMI classification. Pharmacotherapy. 2006;(Table 1):4–9.
- Dinas Kesehatan Republik Indonesia. Riset Kesehatan Dasar 2013. Ris Kesehatan Dasar. 2013;111–6.
- Pramono S, Nugroho A, Wardhani C. Efek fraksi larut air ekstrak etanol 50% kemuning (*Murraya paniculata* (L.) Jack) terhadap berat badan tikus betina diet lemak tinggi. J Ilm Farm. 2004;1(2):3.
- Katsuyuki M, Yoshiyuki S. Oral administration composition. Vol. 12. Unites States; US 2010/0273727 A1, 2010. p. 543.
- Rathnayake KM, Roopasingam T, Dibley MJ. High carbohydrate diet and physical inactivity associated with central obesity among premenopausal housewives in Sri Lanka. BMC Res Notes [Internet]. 2014 [cited 2016 Nov 16] ;7(1):564. Available from: <http://www.scopus.com/inward/record.url?eid=2-s2.0-84906922342&partnerID=ZOTx3y1>
- Arab L, Tseng CH, Ang A, Jardack P. Validity of a multipass, web-based, 24-hour self-administered recall for assessment of total energy intake in blacks and whites. Am J

- Epidemiol. 2011;174(11):1256–65.
17. Marceau K, Ruttle PL, Shirtcliff EA, Essex MJ, Susman EJ, Studies A, et al. Physical Activity and Body Mass Index: The Contribution of Age and Workplace Characteristics. Am J Prev Med. 2015;57(6):742–68

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