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The Effect of Kemuning Leaves Infusion (*Murraya Paniculata* (L.) Jack) on the Lipid Profile of Obese Patients

INTRODUCTION

Currently, the incidence of obesity in developing countries has increased by more than 600 million adults are obese. Obesity can increased the risk of chronic diseases such as type 2 diabetes mellitus, dyslipidemia, hypertension, and coronary heart disease (CHD), which can lead to death.¹

There is a significant relation between the obesity and the levels of cholesterol. Those marked with increase the levels of total cholesterol, triglycerides, LDL cholesterol (Low Density Lipoprotein) And Decreased levels of HDL (High Density Lipoprotein). The increased of cholesterol in the bloodstream will cause a buildup of plaque components in arteries that will lead to narrowing

and blockage of the arteries (atherosclerosis) and can lead to various diseases^{2,3}

In some developing countries, including Indonesia, traditional herbal therapy has been widely applied to various diseases. Society now a days more back to nature, especially in choosing medical therapy that make rapid progress in the traditional medicine therapy. One herbal plant that often used is kemuning leaves (*Murraya paniculata* (L.) Jack) as antiobesity therapy.⁴ Kemuning leaves are known to decrease the levels of total cholesterol, triglycerides, LDL and increase the levels of HDL.^{5,6,7,8,9} Kemuning leaves can inhibit the enzyme HMG-CoA reductase then can reducing blood cholesterol.¹⁰ The use of infusion preparations in society is quite practical and widely used. Therefore, the researcher interested in studying the effect of Kemuning leaves infusion (*Murraya Paniculata* (L.) Jack) on the lipid profile in obese patients.

METHODS

³ This research using quasi-experimental research design with one group pre-test and post-test methods design. Kemuning leaves infusion made at the Laboratory of Food Result Technologi, Faculty of Agriculture, University of Lampung and Microbiology Laboratory, Faculty of Medicine, University of Lampung in December 2016 and January 2017. Examination of Lipid profile (total cholesterol, triglycerides, HDL and LDL) at the KOSASIH Rajabasa Health Laboratory, Bandar Lampung.¹¹

The population of this research was teh lecturers and staffs at the University of Lampung that have criteria as 25-50 years old men with body mass index (BMI) eⁿ 25 kg / m². Number of samples are 16 people. Kemuning leaves infusion (*Murraya Paniculata* (L.) Jack) consumed for 15 days with a frequency of 2 times a day after meals.⁴

Before consumption of kemuning leaves infusion, respondents were measured of weight and height to determine BMI. If included in the criteria as a respondent, the respondent will be explained about the research and given the informed consent sheet. After the respondent agreed to do research, then examined the levels of lipid profile (total cholesterol,

triglycerides, LDL and HDL) pre-test by taking the 3cc median cubital vein blood with a syringe. To monitor the food intake and daily physical activity that is not homogeneous, then the respondent was interviewed and asked to complete a food recall. After 15 days of treatment, the respondents will be checked again the levels of lipid profile (total cholesterol, triglycerides, LDL and HDL) as the post-test data.

Making kemuning leaves simplicia by, (1) Taking kemuning leaves, (2) Separation the kemuning leaves that have a fresh green color, (3) Washed from contaminant, (4) Drained and weighed, (5) Dried in oven until into simplicia, (6) Simplicia pulverized until into powder simplicia, (7) then simplicia powder weighed to 15 grams, (8) Heating 500 ml water to boil or to $\pm 90^{\circ} \text{C}$, (9) added of 15 grams of simplicia powder and stir occasionally, (10) Let it boil up to 250 ml (± 15 minutes), (11) Filter it using filter paper, (12) poured kemuning leaves infusion into 250 ml glass.⁴

On examination of total cholesterol, 500 ul cholesterol reagent was added with 5 ul standard/ sample was then incubated at 25°C for 30 minutes, after that read the result on devices with Chol-s menu. On examination of triglycerides, 500 ul triglycerides reagent is added with 5 ul standard/ sample then incubated at 25°C for 30 minutes, after that read the result on devices with Tgl q menu. On examination of HDL, the preparation of supernatant with 50 ul HDL reagent and 500 ⁶ serum and then incubated at 25°C temperature for 5 minutes then centrifuged for 5 minutes, the blanks with 500 ul chol reagent plus 10 ul water, and samples with 500 ul Chol reagent plus 10 ul supernatant then incubated at 25°C temperature for 10 minutes and for the result, read HDL menu on devices. LDL test results obtained from the total cholesterol minus HDL levels.

RESULTS

The result of the lipid profile levels (total cholesterol, triglycerides, LDL and HDL) before and after consumption of emuning leaves infusion (*Murraya Paniculata* (L.) Jack).

In table 1 shows the increase of total cholesterol mean by 196.81 ± 34.227 and becomes

292.13 ± 65.168. Normality data test using the Shapiro-Wilk test with pre-test results obtained the p value = (p) > 0.05 (0.91) and post-test results obtained the p value = (p) > 0.05 (0.619) so it can be interpreted that the distribution of data is normal. Then the data analysed using t paired test and p value = <0.05 so there was significant increase of total cholesterol mean in statistical tests.

In Table 2 shows the decrease of triglyceride mean levels by 190.94 ± 96.133 becomes 170.13 ± 81.491. Normality data test using the Shapiro-Wilk test with pre-test results obtained the p value = (p) <0.05 (0.047) so it can be interpreted that the data are not normally distributed so it needs to be transformed. After transformed, the p value = (p) > 0.05 (0.293). Post-test results obtained the p value = (p) > 0.05 (0.619) so it can be interpreted that the distribution of data is normal. Then analysis the data using paired t test and p value = p > 0.05 so that the decrease of triglyceride levels mean was not significant in statistical tests.

In Table 3 shows the pre-test HDL mean was 41.25 ± 1.183 and post-test was 41.25 ± 1.483. Normality data test using the Shapiro-Wilk test with pre-test results obtained the p value = (p) <0.05 (0.035) so it can be interpreted that the data was not normally distributed so it needs to be transformed. After transformed, p value = (p) <0.05 (0.039) so it can be interpreted that the data are not normally distributed. Post-test results obtained value of the proportion (p) > 0.05 (0.337) so it can be interpreted that the normal data distribution. Then the data analysed using non-parametric Wilcoxon test and p value = (p) > 0.05 so that the average HDL was not statistically significant. In table 4 shows the increase of LDL mean by 116,94 ± 35,131 and becomes 216,156 ± 67,046. Normality data test using the Shapiro-Wilk test with pre-test results obtained the p value = (p) > 0,05 (0,139) and post-test results obtained the p value = (p) > 0,05 (0,158) so it can be interpreted that the distribution of data is normal. Then the data analysed using t paired test and p value = <0.05 so there was significant increase of total cholesterol mean in statistical tests.

The increased of total serum cholesterol levels indicates that kemuning leaves infusion (*Murraya Paniculata* (L.) Jack) did not cause the

decrease of total serum cholesterol levels in the study for 15 days. Increased levels of total cholesterol can be caused by various factors, especially the factor of food intake and daily activity.¹²

The consumption of daily food intake monitored with food recall. The result shows that respondent average consumption of foods with high fat, carbohydrates and protein for 15 days of treatment. Results of the assessment of physical activity found that all respondents included into the category of mild-moderate physical activity. Everyday, respondents often sit and rarely exercise be assessed.¹³

Consumption of foods that contain cholesterol such as meat, seafood, and egg yolks can increase cholesterol levels in the blood. The intake of foods containing fats ideally below 30%, carbohydrate 50% - 60% and 20% protein, or do not consume more than 300 mg of cholesterol each day. Physical activity can affect a decrease in total cholesterol levels by several mechanisms. In addition, the smoking habit that tends higher in men can also lead to accumulate of cholesterol in bloodstream.^{12,14}

A decrease in triglyceride serum levels before and after consumption of kemuning leaves infusion (*Murraya Paniculata* (L.) Jack) considered there was no significant difference. High carbohydrates, protein and fat diets can contribute to increased triglyceride levels so the kemuning leaves infusion (*Murraya Paniculata* (L.) Jack) are not optimal to decrease triglyceride levels.¹⁵ If the intake of protein too much, amino acids will converted into acetyl CoA that plays a role in the biosynthesis of triglycerides in the body. In addition, the fat in foods containing ± 90% the form of triglycerides to be transported by chylomicrons and immediately circulate throughout the body, then will increase the levels of triglycerides.¹⁶

Physical activity can affect of decrease the triglyceride levels depending on the intensity, duration of activity, and triglyceride levels early, usually with triglyceride levels > 150 mg / dl. Its more effective if physical activity in a medium level until high level.¹⁷

T paired test results shown that the LDL levels after consumption of kemuning leaves infusion (*Murraya Paniculata* (L.) Jack) for 15 days study has a significant increase. Increased LDL serum levels were indicates that kemuning leaves infusion (*Murraya Paniculata* (L.) Jack) did not cause a decrease in serum LDL levels in the study for 15 days.

It can because the daily nutritional intake such as fat and protein which has a significant relations with LDL cholesterol levels. High fatty acids and cholesterol diets will lead to the increase of LDL cholesterol because LDL is the largest lipoprotein cholesterol transporters in the body.¹⁸

² In the study found the majority of respondents, 7 people aged 45-50 years (43.75%). Some experts suggested that the older the person, the more reduced the ability of the LDL receptor as an inhibitor (inhibitor) the synthesis of cholesterol in the body, which will cause the synthesis of cholesterol increased and the levels of total cholesterol levels higher.¹⁸

Based on the results of the Wilcoxon test against HDL levels shows that there is no significant influence among the initial group (pre-test) and the final (post-test). High polyunsaturated fatty acids diets can lead to a decrease of HDL cholesterol by pressing the precursor synthesis

Table 1 : The mean of total cholesterol levels before and after of consumption kemuning leaves infusion (*Murraya Paniculata* (L.) Jack)

Variabel	N	Minimum	Maximum	Mean	SD
Total Cholesterol <i>pre test</i>	16	128	269	196,81	34,227
Total Cholesterol <i>post test</i>	16	181	403	292,13	65,168

Table 2: The mean of triglycerides levels before and after of consumption kemuning leaves infusion (*Murraya Paniculata* (L.) Jack)

Variabel	N	Minimum	Maximum	Mean	SD
Triglycerides <i>Pre test</i>	16	86	392	190,94	96,133
Triglycerides <i>Post test</i>	16	71	342	170,13	81,491

Table 3: The mean of HDL levels before and after of consumption kemuning leaves infusion (*Murraya Paniculata* (L.) Jack)

Variabel	N	Minimum	Maximum	Mean	SD
HDL <i>pre test</i>	16	40	44	41,25	1,183
HDL <i>post test</i>	16	38	44	41,25	1,483

Table 4: The mean of LDL levels before and after of consumption kemuning leaves infusion (*Murraya Paniculata* (L.) Jack)

Variabel	N	Minimum	Maximum	Mean	SD
LDL <i>pre test</i>	16	67	210	116,94	35,131
LDL <i>post test</i>	16	126	326	216,56	67,046

of HDL (apolipoprotein A-1).¹⁹ These factors may affect the results after consumption of herbal therapy for 15 days. Regular physical activity can increase the activity of lipase enzymes that can degrade lipoprotein catabolism of HDL apoprotein and catabolism of HDL so that the HDL levels increased.¹²

CONCLUSION

Based on the results of research and discussion, the following conclusions can be made:

1. There is significant increased of total cholesterol mean levels before and after consumption kemuning infusion leaves (*Murraya Paniculata* (L.) Jack) in obese patients for 15 days.
2. There is no significant decrease of triglyceride

mean levels before and after consumption kemuning infusion leaves (*Murraya Paniculata* (L.) Jack) in obese patients for 15 days.

3. There is no significant changes of HDL mean before and after consumption kemuning infusion leaves (*Murraya Paniculata* (L.) Jack) in obese patients for 15 days.
4. There is a significant increase of LDL mean before and after consumption kemuning infusion leaves (*Murraya Paniculata* (L.) Jack) in obese patients for 15 days.

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