

The Influence of Red Ginger Extract in Menopause Climacterium Period of Total Cholesterols in Covid-19 Pandemic Period in East Java

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Article History:

Submitted: 13.04.2020

Revised: 17.05.2020

Accepted: 24.06.2020

ABSTRACT

COVID-19, which has been declared a pandemic by the World Health Organization on March 11, 2020, is increasingly widespread, WHO reports that today a total of 380,000 people died. In Indonesia an increasing number of 1,721 people died and infected cases in the data in Jombang East Java as many as 69 people who were positive for COVID-19 were hospitalized more than half were over 40 years old. This COVID-19 pandemic condition also causes stress in mothers whose menopausal climacteria can have a major impact because of the decrease in the body's estrogen hormone. heart. One effort to control cholesterol levels is recommended for antioxidant content. Red Ginger (*Zingiber officinale var rubrum*) is one of the spices that has antioxidant content that has long been used as traditional medicine by most people in Indonesia. The next benefit of red ginger is able to reduce bad cholesterol in the blood. Cholesterol can inhibit blood circulation throughout the body. The purpose of this study was to determine the effect of giving red ginger extract in women during menopausal climacteria to total cholesterol during the COVID-19 pandemic in Jombang, East Java. The study design used a quasi-experimental design with a non equivalent (pretest and posttest) control group design. The sample of this research was 92 menopausal climacteric women in Jombang, East Java, consisting of 92 respondents consisting of 46 treatment respondents and 46 control groups. Sampling using purposive sampling. The treatment is giving red ginger extract. The results of research on female respondents during the menopause climaxium mean total cholesterol levels pre test (before given red ginger extract) amounted to the results of the research on female respondents during the menopause climacterial

period the total cholesterol levels pre test (before given red ginger extract) was 222.61 mg / dl and the mean post-test total cholesterol levels (after given red ginger extract) dropped to 200.61 mg / dL. b). The treatment group respondents obtained the mean value of Pre test 222.61 and Post test 200.61. Whereas t Stat 4,991 > t Critical two-tail 2,110 and p value 0,000 $\alpha 0,05$ so that there is a significant difference between the average cholesterol levels before and after administration of red ginger extract. c). Giving red ginger extract to women during menopause climacterium at a dose of 10 grams taken twice daily for 14 days can reduce total cholesterol levels by an average of 22 mg / dl. Pada kelompok kontrol yang tidak diberikan ekstrak jahe merah di dapatkan kenaikan kadar kolesterol total sebesar 4,61 mg/dl. d) In the control group who were not given red ginger extract an increase in total cholesterol levels of 4.61 mg / dl. d) multivariate results $p = 0,000$ ($p < 0.05$) showed that there was an effect of giving red ginger extract in women during menopause climacteria towards total cholesterol during the COVID-19 pandemic in Jombang, East Java. red ginger against degenerative and cardiovascular disease in the COVID-19 pandemic.

Keywords: Red Ginger Extract, Climacterium Menopause, Pandemic COVID-19

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E-mail: mudrisiti@gmail.comDOI: [10.31838/srp.2020.6.120](https://doi.org/10.31838/srp.2020.6.120)

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INTRODUCTION

The spread of Corona Virus Disease 2019 (COVID-19) which has been established as a pandemic by the World Health Organization on March 11, 2020 is increasingly widespread. WHO reports that today a total of 380,000 people died with COVID-19 confirmed cases totaling 6,290,000. COVID-19 has become increasingly epidemic in Indonesia the number of deaths 1,721 people and in Jombang East Java infected cases in the data 69 people who are positive COVID-19 was hospitalized more than half were aged over 40 years. This COVID-19 pandemic condition also causes stress in mothers whose menopausal climacteria can have a major impact because of the decrease in the body's estrogen hormone. heart. One effort to control cholesterol levels is recommended by modification of diet which provides a safer effect.

In addition to limiting consumption of foods derived from animal-source fats, it is also best to consume foods that contain antioxidants. Red Ginger (*Zingiber officinale var rubrum*) is one of the spices that has antioxidant content that has long been used as traditional medicine by most people in Indonesia. The chemical compounds of red ginger consist of gingerol, zingeron, and shogaol. In addition, red ginger contains about 1-4% of essential oils and oleoresin. Essential oils in the red ginger rhizome also have other compound components consisting of zingerberin, kamfena, lemonin, zingiberen, zingiberal, gingeral, and shogaol and other ingredients such as resin oil, starch, organic acids, malic acid,

absolut acid and gingerin. The next benefit of red ginger is that it can reduce bad cholesterol in the blood. Cholesterol can inhibit blood circulation throughout the body. This is the main trigger of a stroke. But by consuming red ginger on a regular basis, either drink the juice or mixed with other ingredients, red ginger can reduce the risk of stroke.

By using natural ingredients that are easily available in the surrounding environment, it is expected to minimize side effects compared to chemical treatment. The purpose of this study was to determine the effect of giving red ginger extract in women during menopause climacteria to total cholesterol during the COVID-19 pandemic in Jombang, East Java.

MATERIAL AND METHODS

This type of quantitative research with a research design using quasi-experimental design with non equivalent (pretest and posttest) control group design. The sample of this research was 92 women of menopause clause in Jombang, East Java, consisting of 92 respondents consisting of 46 treatment groups and 46 control groups. Sampling using purposive sampling.

Conducting research in March until June 2020. This research instrument uses a data collection format and GCU easy touch cholesterol measurement tool. Data collection procedures were initiated by giving informed consent and then carried out data collection in phase I by carrying out total cholesterol using GCU easy touch cholesterol measuring devices to respondents in both the treatment and control groups.

After sampling, an intervention is given by giving 10 grams of red ginger extract (*Zingiber officinale var rubrum*) for 14 days to be taken twice a day, but in the control group the intervention is not given. Respondents were given an observation sheet and instructions on how to consume red ginger extracts. Measurement of total cholesterol was carried out twice, namely before administration of red ginger extract (*Zingiber officinale var rubrum*) and after 14 days of administration of red ginger extract (*Zingiber officinale var rubrum*). The processing of red ginger extract (*Zingiber officinale var rubrum*) begins with washing process with running water to clean the inherent dirt, then red ginger (*Zingiber officinale var rubrum*) is mashed or ground with water added to get the red ginger juice then heated to boiling. Red ginger juice added with sugar with a ratio of 1:

1 then stir until caramelization occurs and turn into red ginger powder. Red ginger powder is packaged in sizes of 10 grams for one drink. Data processing begins with editing, coding and then entering data. Data analysis uses SPSS Statistics 21 program which includes univariate, bivariate and multivariate analysis. Univariate analysis using distribution, bivariate analysis using paired t test, multivariate analysis using multiple regression.

RESULTS AND DISCUSSION

Respondents in this study were women of menopausal climacteric age in Jombang, East Java, with 92 respondents consisting of 46 treatment groups and 46 control groups.

Table 1: Frequency Distribution of Total and Pre-Post Cholesterol Levels of Ginger Extract in the Treatment Group

No	Total Cholesterol Level	Pre		Post	
		f	%	f	%
1	< 200 mg/dl	0	0	28	61
2	> 200 mg/dl	46	100	18	39
	Amount	46	100	46	100

Based on the table above it can be seen that the total cholesterol level in the treatment group before being given 100% red ginger extract above 200 mg / dL. After administration of red ginger extract, the total cholesterol

level > 200 mg / dL fell to 18 respondents (39%), the total cholesterol level <200 mg / dL as many as 28 respondents (61%).

Table 2: Frequency Distribution of Pre and Post Total Cholesterol Levels in the Control Group

No	Total Cholesterol Level	Pre		Post	
		f	%	f	%
1	< 200 mg/dl	41	89	33	72
2	> 200 mg/dl	5	11	13	28
	Amount	46	100	46	100

Based on the table above it can be seen that the total cholesterol level in the control group pre-intervention <200 mg / dL of 41 respondents. > 200 mg / dL for 5 respondents, while total cholesterol levels > 200 mg / dL increased by 13 respondents.

Measurement of total cholesterol levels of women during menopause climacterium before administration of red ginger extract in the treatment group and the control group that 46 respondents in the treatment group had an average pre-test cholesterol level of 223 mg / dL with a standard deviation of 24 mg / dL, a standard error of 6 and a minimum value of 204 mg / dL and a maximum of 290 mg / dL are obtained. In 46 respondents the pre-test cholesterol level was 182 mg / dL with a standard deviation of 14 mg / dl, a standard error of 3 and a minimum value of 157 mg / dL and a maximum of 204 mg / dL was obtained.

Measurement of total cholesterol levels of women during menopause climacterium after administration of red ginger extract in the treatment and control groups showed 18 respondents in the treatment group had an average pre-test cholesterol level of 223 mg / dL with a standard deviation of 24 mg / dL, a standard error of 6 minimum values 204 mg /

dL and a maximum of 290 mg / dL. In 18 respondents the control group had a pre-test average cholesterol level of 182 mg / dL with a standard deviation of 14, a standard error of 3 a minimum value of 157 mg / dL and a maximum of 204 mg / dL

Measurement of total cholesterol levels of women during menopause climacterium after administration of red ginger extract in the treatment group and the control group had a mean value of Pre 223 and Post 201. While t Stat 4.991 > t Critical two-tail 2,110 and p value 0,000 < alpha 0.05 so there is a significant difference between the average cholesterol levels before and after administration of red ginger extract. In the control group, the mean values of Pre 181 and Post 186 were obtained. While the t Stat 1.435 < t Critical two-tail 2,110 and p value 0.169 > alpha 0.05 so that there were no significant differences in the control group that were not given red ginger extract

The most influential measurement was the intervention group in the treatment group who were given red ginger extract for 14 days with a value of p = 0,000 (p < 0.05) showing a significant effect.

Total Cholesterol Levels in Respondents Before Giving Red Ginger Extract. Total cholesterol is the overall level of cholesterol circulating in the human body. High cholesterol or hypercholesterolemia is a condition where the level of cholesterol in the blood exceeds normal levels. Cholesterol in the body can cause various diseases, especially heart disease and hypertension, is included in the category of the top ten non-communicable diseases that suffer a lot of Indonesian people (Riskasdas, 2013).

Excess cholesterol in the body will be buried in the walls of blood vessels and cause a condition called atherosclerosis, which is narrowing or hardening of the arteries. This condition is a risk of heart disease and stroke. Blood cholesterol levels are affected by the daily composition of food that enters the body (diet).

Other factors that can affect blood cholesterol levels besides diet are heredity, age, gender, obesity, stress, alcohol, exercise. This study with female respondents in the menopausal climacteric period with an age range of 40-65 years in which there were 51 respondents (55.5%) consisting of 46 people from the treatment group and 5 control groups with total cholesterol levels of more than 200 mg / dl at the time before red ginger extract was given. In this study the majority of respondents pretest total cholesterol levels > 200 mg dl.

An increase in cholesterol levels is a risk factor for cardiovascular disease, especially in women during the menopausal climacterium where as they get older there is a decrease in the hormone estrogen which is very instrumental to protect against cardiovascular disease.

Climacterium is a transition from the reproductive period to the non-reproductive period that occurs in women aged 40-65 years. This period is marked by a variety of complaints. Climacterium is not a pathological state, but a normal transitional period which lasts several years before and after menopause. This is caused by the ovary getting old, so the hormone estrogen decreases and the hormone gonadotropin increases (Prawirahadjo, 2000).

Decreased or lost estrogen levels cause an increase in cholesterol and a decrease in total fat. The presence of hypertension and an increase in cholesterol levels causes an increase in risk factors for atherosclerosis. Especially regarding primary coronary sclerosis and myocardial infarction will occur 1-2 times more often after estrogen levels decline. Decreased estrogen levels can cause increased atherosclerotic risk factors due to increased levels of total cholesterol, triglycerides and Low Density Lipoprotein (LDL), and decreased levels of High Density Lipoprotein (HDL). An increase in cholesterol levels in women occurs 10-15 years slower in men. Total cholesterol is the total amount of cholesterol in the blood. Total cholesterol shows the amount between HDL cholesterol, LDL cholesterol, and triglycerides. Normal total cholesterol level is under 200 mg / dl. The results of this study indicate that 46 respondents in the treatment group had an average pre-test cholesterol level of 222.61 mg / dL with a standard deviation of 23.87 mg / dL, a standard error of 5.63 and a minimum value of 204 mg / dL was obtained and a maximum 290 mg / dL. In 46 respondents the control group had an average pre-test cholesterol level of 181.50 mg / dL with a standard deviation of 14.26 mg / dL, a standard error of 3.36 and a minimum value of 157 mg / dL

and a maximum of 204 mg / dL . In the treatment group with a mean total cholesterol level pre test 222.61 higher than the control group that is 181.50.

Total Cholesterol Levels in Respondents After Giving Red Ginger Extract. This study with 92 women respondent of menopause climacterium age 40-65 years which were divided into treatment groups and control groups with each group of 46 respondents. At the beginning of the study, total cholesterol levels were examined for all respondents. Before a cholesterol check is performed, respondents are recommended fasting approximately 10 hours beforehand. In the treatment group was given 10 grams of red ginger extract which was taken twice a day for 14 days while in the control group was not given.

The results showed that 46 respondents in the treatment group had an average post-test cholesterol level of 00.61 mg / dL with a standard deviation of 22.33 mg / dL, a standard error of 5.26 and a minimum value of 174 mg / dL and a maximum of 269 mg / dL. In 46 respondents the control group had an average post-test cholesterol level of 186.11 mg / dL with a standard deviation of 18.19, a standard error of 4.29 and a minimum value of 158 mg / dL and 20mg / dL. In the treatment group respondents, the average total cholesterol level of 200.61 mg / dl decreased compared to the time of the pres test which was 222.61 mg / dL. While the control group respondents mean total cholesterol levels of 186.11 mg / dL increased compared to the pre-test examination which was 181.5 mg / dL. Thus the treatment group respondents had a mean post-test total cholesterol level decreased after consuming red ginger extract for 14 days.

Giving red ginger extract blood circulation and indirectly cholesterol levels in the blood will also decrease. Cholesterol is generally caused by a lot of saturated fat, so the body produces a lot of LDL which is bad cholesterol and can put a person at risk of suffering from cardiovascular disease. Red Ginger which has essential oils will act as an active ingredient that will remove LDL from the body and stimulate hormones in the body to produce more HDL, which is good cholesterol which helps our body to increase immunity. Red Ginger can also reduce high blood pressure by stimulating the release of the hormone adrenaline and widening blood vessels. Thus the blood flow will be fast and smooth so that it can ease the heart's performance in pumping blood. The Effect of Ginger Extract (*Zingiber officinale var rubrum*) on Total Cholesterol Levels of Women in Menopause Climacteric Period Ginger plants grow in Indonesia and are known as plants that are widely used as alternative non-pharmacological treatments. Red Jehe with the Latin name *Zingiber officinale var rubrum* is one type of ginger that has a very strong benefit content. Red Ginger has a smaller size compared to ginger in general. But it has very many typicalists. Red Ginger (*Zingiber officinale var rubrum*) contains many compounds that make this plant have the ability to cure various diseases. The red ginger part that is widely used is the rhizome because the red ginger rhizome has a variety of natural compounds that give a distinctive flavor that is spicy. Red Ginger is not like the type of ginger in general, the sensation of spicy taste of the type of red ginger is much more felt because the content of tannins

and a ketone called gingerol is much higher when compared to other ginger.

The concentration of gingerol in fresh ginger is higher than in dry ginger. Red Ginger can reduce cholesterol by increasing the activity of enzymes in the biosynthesis of bile acids and stimulating the change of cholesterol into bile acids. The main component of red ginger is gingerol which is anticoagulant. Ginger function prevents blood clots so that blood vessels are not blocked. Blockage of blood vessels is a major cause of strokes and heart attacks. Besides gingerol also plays a role in reducing cholesterol levels. Red Ginger also contains antioxidants which neutralize free radicals in the body. Based on the results of statistical analysis using paired t test results obtained $p = 0,000$ ($p < 0.05$) in the treatment group. Thus there is a significant influence at the time of the pre test / before and post test / after administration of red ginger extract. In the treatment group, before administration of red ginger extract, the average cholesterol level was 223, while after administration of red ginger extract, it dropped to 201.

The opposite happened in the control group which at the beginning of the examination was a mean total cholesterol level of 182 and when the examination after treatment rose to 186. Based on the results of the paired t test analysis found an average reduction in total cholesterol level of 22 mg / dL after given red ginger extract for 14 days in the treatment group. From the paired t test, p value $0.000 < \alpha 0.05$ was obtained so that there was a significant difference between the average cholesterol levels before and after administration of red ginger extract. Thus the administration of red ginger extract for 14 days can reduce cholesterol levels by an average of 22 mg / dL. In the control group who were not given red ginger extract an increase in total cholesterol levels of 4.61 mg / dL. In the treatment group the highest cholesterol level was 290 at the pre-test (before giving red ginger extract), while at the post-test (after giving red ginger extract) it dropped to 269.

In the control group the highest cholesterol level was 204, while at the time of the post-test examination it increased to 220. Thus there was a difference between the total cholesterol level in respondents who were given red ginger extract drinks (*Zingiber officinale var rubrum*) and respondents in the control group who were not given extract drinks red ginger (*Zingiber officinale var rubrum*). For respondents who were given 10 grams of red ginger extract (*Zingiber officinale var rubrum*) taken twice a day, the average total cholesterol level dropped by 22 mg / dl after consuming it for 14 days. Compliance with drinking red ginger extract that can be known from the observation sheet that has been distributed to respondents at the beginning of the study.

Decreased cholesterol levels vary. Of the 46 treatment group respondents there were 40 respondents (88.9%) decreased total cholesterol levels and 6 respondents (11.1%) people whose total cholesterol levels rose. Factors that can affect cholesterol levels are food, body weight, physical activity or sports, excessive alcohol drinking, smoking, stress, age and gender (Almatsier, 2008). Eating foods high in saturated fat and cholesterol will increase total cholesterol and LDL levels. Consumption of fatty foods, coconut milk, fried foods and fast food is often a habit in the community. In addition, the habit of lack of consuming foods that can help reduce

cholesterol (hypocholesterolemia) including fiber from vegetables and fruits, soybeans (tempeh) can also affect blood cholesterol levels. Unhealthy eating patterns can also lead to obesity, especially in women aged forty years and over. Being overweight is a risk for heart disease and tends to raise cholesterol levels.

Obese people tend to have high blood triglyceride levels. Regular physical activity can reduce LDL cholesterol and raise HDL cholesterol in addition to reducing body weight. In this study using red ginger extract obtained from fresh red ginger extract which has been processed into red ginger extract powder (*Zingiber officinale var rubrum*) to facilitate respondents in consuming red ginger without the hassle of preparing their rhizomes at the first dose of 10 grams taken twice daily.

Consuming red ginger drinks regularly is very suitable especially to reduce cholesterol levels so that it can reduce the risk of cardiovascular disease. Increased cholesterol is a risk factor for cardiovascular disease, especially in women during menopause climacterium. Cholesterol levels tend to increase with age. The use of red ginger (*Zingiber officinale var rubrum*) for controlling total cholesterol levels is one alternative to non-pharmacological treatment with natural ingredients that are widely available in the community easily and cheaply so that it can reduce the high number of patients with hypercholesterolemia, especially in women near the menopause climacterium.

CONCLUSION

Based on the results of research that have been done can be concluded as follows: a). The results of the study on female respondents during menopause climacteria during the mean total pre-test cholesterol levels (before given red ginger extract) amounted to 222.61mg / dl and the average post-test total cholesterol levels (after given red ginger extract) dropped to 200.61mg / dL. b). The treatment group respondents obtained the mean value of Pre test 222.61 and Post test 200.61. Whereas t Stat $4,991 > t$ Critical two-tail 2,110 and p value $0,000 < \alpha 0,05$ so that there is a significant difference between the average cholesterol levels before and after administration of red ginger extract. c). Giving red ginger extract to women during menopause climacterium at a dose of 10 grams taken twice daily for 14 days can reduce total cholesterol levels by an average of 22 mg / dl. In the control group who were not given red ginger extract an increase in total cholesterol levels of 4.61 mg / dl. d) multivariate results $p = 0,000$ ($p < 0.05$) showed the effect of giving red ginger extract in women during menopause climacteria to total cholesterol during the COVID-19 pandemic in Jombang, East Java.

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