2nd THE INTERNATIONAL CONFERENCE ON HEALTH SCIENCES (TICHeS)
"Post Covid-19 Management in a Multidisciplinary Pespective"
ISSN: 2722-5119

EFFECT PAPAYA JUICE COMBINATION OF BASIL ON REDUCING BLOOD CHOLESTEROL LEVELS

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ABSTRACT

Introduction: Cholesterol is a fatty substance circulating in the body, produced by the liver and needed by the body. Cholesterol is very necessary but if it is used excessively it will be a problem. Efforts to overcome excess cholesterol in the blood through non-pharmacological therapy, namely papaya juice combination of basil. Papaya fruit contains vitamin C, fiber, niacin, and papain enzymes, while basil leaves contain flavonoids, tannins and eugenol. The content in papaya and basil have antihypercholesterol effects. The purpose of the study was to identify cholesterol levels in the blood before and after being given a combination of basil and papaya juice. Research method: pre experimental with one group pre-post test design. The sampling technique used purposive sampling method. the number of samples is 20 elderly respondents. The independent variable in this study was the combination of papaya juice with basil, while the dependent variable in the study was cholesterol levels in the blood. The research instrument used an easy touch GCU cholesterol check measuring instrument with units of mg/dLData analysis using the normality test using Shapiro-Wilk then continued using the paired sample t test with the help of SPSS 22.0. Results of statistical data analysis obtained the value of Sig (2-tailed) in the experimental group p = 0.805 (> 0.05) which means that there is no difference before and after being given a combination of basil and papaya juice. Conclusion: there is no effect of giving papaya juice with a combination of basil on reducing cholesterol levels in the blood.

Keywords: Cholesterol, papaya, basil, elderly

INTRODUCTION

Cholesterol is a fatty substance circulating in the body, yellowish in color, produced by the liver and is needed by the body. Cholesterol is a non-hydrolyzed lipid group and is the main sterol in human tissues (Morika et al, 2020). Cholesterol is suffered by a lot of the elderly due to the age factor the longer the body will be more lazy to move, so that cholesterol in the body will accumulate in the liver, therefore a balanced motion is needed between diet and exercise to avoid excess cholesterol. Cholesterol is very necessary in the body but if it is used excessively it will be a problem. Based on a survey by researchers, the elderly consume less fruit as the main source of dietary fiber and lack of physical activity. Signs and symptoms often complained of are joint pain in the knee, tingling and fatigue. Management of cholesterol levels using two methods, namely pharmacological and non-pharmacological therapy. Pharmacological therapy usually used by people with hypercholesterolemia is nicotinic acid (niacin). Continuous use of niacin can have side effects such as nausea and abdominal pain and increase uric acid levels (Desrelia et al, 2020). While non-pharmacological therapy uses

vegetables and fruits that contain high fiber and antioxidants that play a role in counteracting free radicals (Erviana et al, 2016).

The Amarican Heart Association (AHA) estimates that more than 100 million Americans have a total cholesterol level >200 mg/dl, including high enough and more than 34 million adults have a total cholesterol level >240 mg/dl, including high. (Utami & Zuraida, 2020). The percentage of high cholesterol according to the age group > 60 years was 58.7% and the age group > 15 years was 35.9%. The prevalence of cholesterol sufferers in Indonesia is still high, in 2018 the increase in total cholesterol was 43%, triglycerides 26%, LDL 83%, and HDL decreased 23%, while the prevalence of hypercholesterolemia in East Java was 30.38% (Mauliddya, 2020). Diseases caused by cholesterol are classified as non-communicable diseases. According to data from the Gresik District Health Office (2016), the prevalence of deaths from non-communicable diseases has increased from 37% to 57% in 1990-2015. The data shows that people with cholesterol disease still exist and have increased. So far, in Singorejo Hamlet, Dahanrejo Village, Kebomas District, Gresik Regency, the management of cholesterol lowering is done pharmacologically with the Posyandu program for the elderly, but non-pharmacological treatment has never been done.

WHO recommends the use of traditional medicine in maintaining health, preventing and treating chronic and degenerative diseases (WHO, 2008 in Setiyono & Bermawie, 2013). The results of Dewi (2015) show that fiber in the body is hypocholesterolemic, has a resistance effect against coronary heart disease through lowering cholesterol. Meanwhile Sari, et al (2010) that the lack of consumption of fibrous foods has a risk of 3,648 times having high total cholesterol levels compared to the consumption of sufficient fiber foods. Papaya fruit has an antihypercholesterol effect through the activity of various biological compounds contained in it such as vitamin C, fiber, niacin, and papain enzymes. (Dewi & Probosari, 2012). While basil leaves contain flavonoids, tannins and eugenol (Mbulang et al, 2021).

Previous research Endrinaldi & Asterina (2012), administration of papaya extract at a dose of 0.5 ml/1 ml/1.5 ml per 200g/BW orally for 15 days could significantly reduce total cholesterol, LDL and HDL blood levels of hypercholesterolemic male white rats ($p<0.05$). While Mbulang, et al (2021) that the combination of basil root and stem extract has antihypercholesterolemic activity with the best dose in lowering total cholesterol and triglycerides in white rats fed a high fat diet is dose II, which is 100 mg/kg BW rats. Based on the description above, research on the combination of basil and papaya juice has never been done, therefore the researchers conducted a study on "The Effect of Giving Papaya Juice with Basil Combination on Reducing Blood Cholesterol Levels in the Elderly".

METHOD

The research method used pre-experimental design with one group pre-post test design. The research was carried out in Dahanrejo Village, Kebomas District, Gresik Regency. The population in this study were 22 respondents and a sample of 20 elderly respondents. The sampling technique was purposive sampling. The sample was divided into 2 groups, namely the experimental group and the control group, each group consisting of 10 respondents. The experimental group was given papaya juice (1 ml dose) with a combination of basil (20 mg dose) daily as much as 400 ml for 7 consecutive days in the morning before breakfast. While the control group of respondents without being given a combination of papaya juice with basil. Sampling was taken based on the inclusion criteria were male and female patients, aged 55 years and over, and willing to be research subjects. Analysis of the data using the normality test using Shapiro-Wilk, if it is known that the sig value > 0.05 then the data is normally distributed, so that it can be continued using the paired sample t test to determine whether there

is an effect of papaya juice combination with basil on reducing blood cholesterol levels. Data analysis was carried out with the help of SPSS 22.0 for window.

RESULTS

The research results obtained from data collection are as follows:

1. Cholesterol levels in the blood before being given a combination of basil and papaya juice

Table 1. Blood cholesterol levels in the experimental group and control group before being given a combination of papaya juice with basil

Cholesterol levels in the blood	Group			
	Eksperiment		Control	
	Frequency	Percentage (%)	Frequency	Percentage (%)
Desired (<200 mg/dL)	2	20	7	70
High limit (200-239 mg/dL)	5	50	3	30
High (>240 mg/dL)	3	30	0	0
Total	10	100	10	100
Mean	221,80		185,20	
Std Deviation	26,368		18,317	

Source: Primary Data, 2021

Table 1 explains that before being given papaya juice with a combination of basil, cholesterol levels of most of the respondents in the experimental group were within the high limit of 5 people (50%) and 3 people (30%). Meanwhile, the cholesterol levels of most of the respondents in the experimental group were within the desired limits, namely 7 people (70%). The average value in the experimental group is 221.80 while in the control group is 185.20. And the standard deviation in the experimental group is 26,368 while in the control group is 18,317.

2. Cholesterol levels in the blood after being given a combination of papaya juice with basil

Table 2. Blood cholesterol levels in the experimental group and the control group after being given a combination of papaya juice with basil

Cholesterol levels in the blood	Group			
	Eksperiment		Eksperiment	
	Frequency	Frequency	Frequency	Frequency
Desired (<200 mg/dL)	2	20	7	70
High limit (200-239 mg/dL)	5	50	3	30
High (>240 mg/dL)	3	30	0	0
Total	10	100	10	100
Mean	221,30		189,20	
Std Deviation	27,232		15,411	

Table 2 explains that after being given a combination of papaya juice with basil, the cholesterol levels of most of the respondents in the experimental group were within the high limit of 5 people (50%) and 3 people (30%). Meanwhile, the cholesterol levels of most of the respondents in the experimental group were within the desired limits, namely 7 people (70%). The average

value in the experimental group is 221.30 while in the control group is 189.20. And the standard deviation in the experimental group is 27.232 while in the control group is 15.411.

3. The effect of giving papaya juice with a combination of basil on reducing cholesterol levels in the blood

Table 3. The effect of giving papaya juice with a combination of basil on lowering cholesterol levels in the experimental group

Cholesterol levels in the blood	Group		Cholesterol levels in the blood	
	Eksperiment	Persentase (%)	Eksperiment	Persentase (%)
Desired (<200 mg/dL)	2	20	2	20
High limit (200-239 mg/dL)	5	50	5	50
High (>240 mg/dL)	3	30	3	30
Total	10	100	10	100
Mean	221,80		221,30	
Std Deviation	26,368		27,232	
Paired Sample Test nilai Sig. (2-tailed) = 0,805				

Table 3 shows the number of respondents before and after being given a combination of basil and papaya juice. Based on the statistical test results of the paired samples test, it is known that the average value before being given the basil combination papaya juice is 221.80 and the standard deviation value is 26.368 while the average value after being given the basil combination papaya juice is 221.30 and the standard deviation value is 27.232 with a significant p = 0.805, meaning p> 0.05 then H0 is accepted, which means that there is no effect of giving papaya juice with a combination of basil on reducing cholesterol levels in the blood. Judging by the slight difference in the average value produced in the statistical test, it shows that there is a slight decrease in cholesterol levels but not too significant.

DISCUSSION

1. Identification of cholesterol levels in the blood before being given the combination of basil and papaya juice

The results showed that respondents in the experimental group before being given papaya juice with a combination of basil and the control group without being given papaya juice with a combination of basil mostly had high cholesterol levels. High levels of cholesterol in the blood can cause hypercholesterolemia. Cholesterol is found in food and the body mainly as free cholesterol or as esters with fatty acids. Cholesterol can increase if you often consume foods with high animal fat content such as beef brain, red meat, seafood, egg yolks, cheese or fast food. A person is said to be suffering from hypercholesterolemia if the total plasma cholesterol level is > 200 mg/dl. Total plasma cholesterol levels of 200 mg/dl are equivalent to LDL cholesterol levels of 130 mg/dl (Wirawan, 2018).

The formation of LDL by receptors is important in controlling blood cholesterol. In the blood vessels there are damaging cells that can damage LDL. Through this pathway of damaging cells, LDL molecules are oxidized, so they cannot re-enter the bloodstream. Cholesterol that is abundant in LDL will accumulate in destroying cells. If this happens for years then cholesterol will accumulate on the walls of blood vessels and form plaques. Plaque

will mix with protein and be covered by muscle cells and calcium. This can then develop into atherosclerosis (Ardian & Probandari, 2018). Atherosclerosis has an influence on the incidence of heart and blood vessel disease. In heart and blood vessel disease caused by atherosclerosis, the blood vessels become narrowed and hardened. This blocks the flow of oxygen-rich blood to the heart and can eventually lead to coronary heart disease (Desrelia et al, 2020).

2. Identification of cholesterol levels in the blood after being given a combination of papaya juice with basil

The results showed that the cholesterol levels of respondents in the experimental group after being given papaya juice with a combination of basil, were mostly within the high limit (200-239 mg/dL) as many as 5 respondents (50%) and high (>240 mg/dL) as many as 3 respondents (30%). The increase in cholesterol levels in the experimental group was due to the low dose of papaya (1 ml) and basil (20 mg) given to respondents, and the duration of administration of papaya juice in combination with basil so that it did not have an effect on lowering blood cholesterol levels in the elderly. Research by Desrelia (2020) giving papaya juice at a dose of 400 mg/day can reduce cholesterol levels to normal limits. long administration of papaya extract for 15 days can reduce total cholesterol levels, LDL, increase HDL (Endrinaldi, 2012). While the basil doses of 100 and 200 mg/kgBW for 2 weeks can play a role in lowering cholesterol levels (Ali et al, 2017). In addition, there are other factors, namely researchers cannot take many respondents because this research was carried out during the covid-19 pandemic, and the lack of respondents in complying with dietary rules recommended by researchers, namely reducing the consumption of foods that contain lots of fat. This study is in line with Ampangallo et al (2021), namely the relationship between diet (fiber) and food frequency (meat and vegetables) with cholesterol levels.

There are 2 respondents in the normal cholesterol category with total cholesterol levels <200 mg/dL, this is due to the presence of antioxidants in papaya (vitamin C, fiber, niacin, papain enzymes), and antioxidants in basil (flavonoids, tannins and eugenol). (Dewi & Probosari, 2012; Mbulang dkk, 2021). The mechanism of Vitamin C plays a role in helping the hydroxylation reaction in the formation of bile acids which can increase the excretion of cholesterol in the body so that it can reduce cholesterol levels in the blood. The mechanism of fiber in reducing cholesterol levels is to delay gastric emptying, resulting in reduced calories. Fiber will bind fat so that fat absorption will be disrupted (Dewi & Probosari, 2012). Flavonoids can lower cholesterol and triglycerides by inhibiting HMG Co-A reductase which functions to convert 3-hydroxy-3-methylglutaryl-Co-A into mevalonate in cholesterol synthesis in the liver. (Azhari et al, 2017; Mutia et al, 2018). Eugenol has activity in lowering cholesterol with the mechanism of action of inhibiting lipid peroxidation (Rahmawati et al, 2019). Tannins have a mechanism of action, namely by forming bonds with proteins and coating the walls of the small intestine so that fat absorption in the intestine will be inhibited and there will be a decrease in cholesterol synthesis. (Mutia et al, 2018).

3. Effect of papaya juice combination of basil on lowering cholesterol levels in the blood

Based on the results of the paired samples test statistical test, it is known that the average value in the experimental group after being given the combination of basil papaya juice is 221.30 and the standard deviation value is 27.232 with a significant value of $p = 0.805 > 0.05$, which means that there is no effect of giving papaya juice with a combination of basil. to reduce cholesterol levels in the blood. There is no effect of giving papaya juice with a combination of basil, this is because the dose of papaya (1 ml) and basil (20 mg) given to respondents is low, and the duration of giving papaya juice with a combination of basil is for seven days so it has not had an effect on lowering cholesterol levels in the blood. in the elderly. Research by Desrelia (2020) giving papaya juice at a dose of 400 mg/day can reduce cholesterol levels to normal limits. long administration of papaya extract for 15 days can reduce total cholesterol

levels, LDL, increase HDL (Endrinaldi, 2012). While the basil doses of 100 and 200 mg/kgBW for 2 weeks can play a role in lowering cholesterol levels (Ali et al, 2017). In addition, there are other factors, namely the researcher could not take many respondents because the study was conducted during the covid-19 pandemic, and the lack of respondents in complying with the dietary rules recommended by the researcher, namely reducing the consumption of foods that contain lots of high fat content. This study is in line with Ampangallo et al (2021), namely the relationship between diet (fiber) and food frequency (meat and vegetables) with cholesterol levels. Further research is expected to increase the dose of papaya juice with a combination of basil and duration of administration and the respondents are expected to comply with the mutual agreement between the researcher and the respondent during the study, such as the respondent is not allowed to consume foods containing high cholesterol.

CONCLUSIONS AND RECOMMENDATIONS

The administration of papaya juice with a combination of basil has no effect on reducing cholesterol levels in the blood, this is because the dose of papaya and basil given to respondents is low, and the duration of administration of papaya juice with a combination of basil has not had an effect on lowering cholesterol levels in the blood in the elderly.

It is necessary to increase the dose of papaya juice with a combination of basil and duration of administration and the respondents are expected to comply with the mutual agreement between the researcher and the respondent during the study, such as the respondent is not allowed to consume foods containing high fat content.

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