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INFLUENCE GIVING CARROT JUICE (*Daucus Carota L*) AND TOMATO JUICE (*Lycopersicon Esculentum L*) TO DECREASE CHOLESTEROL LEVELS IN CHOLESTEROLEMIC PATIENTS IN SUKAMAJU VILLAGE WORKING AREA OF KUSURI HEALTH CENTER WEST TOBELO DISTRICT 2020

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ABSTRACT

Background: Background: One of the non-communicable diseases is hypercholesterolemia, which is a condition in which cholesterol in the body exceeds normal levels in the blood. Excessive cholesterol levels will settle in the blood circulation channel so that it constricts the blood flow channel and interferes with the normal circulatory system. The purpose of the study was to determine the effect of giving carrot juice (*Daucus Carota L*) and tomato juice (*Lycopersicon Esculentum L*) on reducing cholesterol levels in hypercholesterolemic patients in Sukamaju Village, Kusuri Health Center working area, West Tobelo District. Quasi Experiment: **Research Method** with the design used is pre-test and post-test. The population in this study were all people with cholesterol as many as 30 people where the respondents were divided into two groups consisting of 15 respondents who were given carrot juice and 15 respondents who were given tomato juice and sampling using total sampling, namely 30 respondents with cholesterol above 200 mg / dL. **Research Results**: The mean value of cholesterol levels in the intervention group before and after administration of carrot juice was 238 mg/dL and 199 mg/dL, and the mean value of cholesterol levels in the intervention group before and after administration of tomato juice was 236 mg/dL and 198 mg/dL, the mean difference in Mean (Mean Defrance) between the intervention group given Carrot Juice and the group given Tomato Juice was 1,003 and the mean value of the group given Carrot Juice was greater than the intervention group given Tomato Juice and the P = 0.03 (P < 0.05). **Conclusions and Suggestions**: there is a significant difference between the cholesterol levels of the group given carrot juice and the group given tomato juice with P values =0,03.

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PRELIMINARY

Health problems are one of the problems that exist in Indonesia and of course, must be addressed immediately. Infectious diseases and non-communicable diseases are health problems. Mortality rates for non-communicable diseases fluctuate from time to time.[1]

One of the non-communicable diseases is hypercholesterolemia, which is a condition in which cholesterol in the body exceeds normal levels in the blood. Excessive cholesterol levels will settle in the circulatory channel so that it constricts the blood flow channel and disrupts the normal blood circulation system.[2]

High cholesterol is a risk factor for various diseases. High cholesterol levels are associated with an increased risk of coronary heart disease, stroke, hypertension, and obesity.[3]

Hypercholesterolemia can only be detected by blood tests. If the cholesterol level is > 200 mg/dL, it is said to be suffering from hypercholesterolemia.[4]

The prevalence of hypercholesterolemia in the world or according to the World Health Organization (WHO) 2020, is around 45%, and in Southeast Asia, it is around 30%. Currently, hypercholesterolemia is still a health problem. Increased Cholesterol Levels are estimated to cause 2.6 million deaths and 29.7 million disabilities per year.5 According to the results of Riskesdas in 2018, in the population aged >15 years in Indonesia there were 35.9% and Riskesda in 2018 by 35% had cholesterol disorders In total, 15.9% had high LDL levels, 11.9% had high TG levels, and 22.9% had low HDL levels.[6]

Hypercholesterolemia in Indonesia for females is as much as 37.2% for the male sex as much as 32.8%. Hypercholesterolemia prevalence for aged 25-34 years is 9.3%.[7]

North Halmahera Regency the number of cases of Cholesterol sufferers in 2020 was 1,060 cases. 8 Data from the Kusuri Health Center the number of Cholesterol sufferers in 2020, 147 cases, and in Sukamaju Village as many as 6 cases, in 2021 (January-June) as many as 41 cases, and Sukamaju Village as many as 10 case.[8]

Cholesterol is a complex fat compound that is found in every cell in the body. Cholesterol serves as a material for the formation of bile fluid, cell walls, vitamins, and certain hormones, such as sex hormones and others. So that the amount of cholesterol produced by the body is even as much as 80% made by the body, only 20% enters with food ingredients.[9]

Treatments that use natural ingredients traditionally generally do not cause side effects. Vegetable ingredients that have high fiber and antioxidant content can lower cholesterol levels. One of them is Tomatoes and Carrots, which are plants that contain antioxidants (Vitamins and Minerals) and high fiber content. Carrots contain pectin, glutathione, minerals (calcium, phosphorus, iron, potassium, sodium, magnesium, chromium), vitamins (beta carotene, B1, and C), and asparagine. The fiber in carrots can also lower total cholesterol by 10.7%, and increase High-Density Lipoprotein (HDL) by 3.2%.[10] Tomatoes are a source of protein, fat, vitamins, and minerals but also contain bioactive substances such as lycopene, vitamin A, vitamin C, solanine, saponins, folic acid, malic acid, citric acid, bioflavonoids (including lycopene, and -carotene), and histamine. . Tomatoes have

very strong antioxidant activity, the antioxidants contained in tomatoes are Lycopene.[11]

METODE

This research is Experimental research with a Quasi-Experimental Design With Pre-Post tests.[19] This study intends to analyze the effect of giving carrot juice (Daucus carota L) and tomato juice (Lycopersicon esculentum L.) on reducing cholesterol levels in cholesterolemic patients. The intervention group in this study were patients who would undergo an intervention procedure by giving Carrot Juice (Daucus Carota L) and Tomato Juice (Lycopersicon Esculentum L.).

This research was conducted in Sukamaju Village, West Tobelo District, North Halmahera Regency. This research was conducted in August-September 2020.

The population is the total number consisting of subjects who have certain characteristics and qualities determined by the researchers to be studied.19 The population in this study was taken from the number of cholesterol sufferers in Sukamaju village who were routinely checked at Kusuri Health Center Tobelo Barat District in 2020 as many as 30 people.

The sample is part of several characteristics possessed by the population used for research or a small part of the population members taken according to certain procedures.19 The number of samples used in this study was 30 people according to the inclusion criteria. Inclusion criteria are general requirements that must be met by the subject to be included in the study. The inclusion criteria in this study are:

a. Age 40 years
b. Respondents have Cholesterol Disease
c. Respondents are aware and can be invited to communicate well
d. Respondents are willing to sign the research consent form (Informed Consent).

Execution Criteria Is a criterion where the research subject cannot represent the sample because it does not meet the requirements as a research sample.

a. Not willing to be a respondent
b. Respondents were not present at the time of data collection.

RESULTS

Table 4.1 Frequency Distribution of Respondents in the Intervention Group for Giving Carrot Juice by Age

Age	N	%
40 – 55 Year	3	20.0
56 – 60 Year	9	60.0
61 - 65 Year	2	13.0
>65 Year	1	7.0
Total	15	100

Source: Primary Data 2020

From 15 respondents (100%) it was found that the majority of respondents who received Carrot Juice were the most in the age range of 56-60 years, namely 9 people (60%) and the least in the age range >65 years as many as 1 person (7.0%).

Table 4.2 Frequency Distribution of Respondents in the Intervention Group for Giving Tomato Juice by Age

Age	N	%
40 – 55 Year	2	13.0
56 – 60 Year	8	54.0
61 - 65 Year	3	20.0
>65 Year	2	13.0
Total	15	**100**

Of the 15 respondents (100%) it was found that the majority of respondents who received the most Tomato Juice were in the age range of 56-60 years, namely 8 people (54%) and at least 2 people in the age range of 40-55 years and >65 years. (13.0%).

Table 4.3 Frequency Distribution of Respondents in the Intervention Group for Giving Carrot Juice by Education

Education	N	%
SD	6	40.0
SMP	8	53.0
SMA	1	7.0
Total	15	100

Source: 2020 primary data

From 15 respondents (100%) it was found that the majority of respondents who received Carrot Juice were mostly respondents with 8 junior high school education levels (53%) and the least respondents with high school education levels were 1 person (7.0%).

Table 4.4 Frequency Distribution of Respondents in the Intervention Group for Giving Tomato Juice Based on Education

Education	N	%
SD	3	40.0
SMP	10	53.0
SMA	2	7.0
Total	15	**100**

Source: 2020 primary data

From 15 respondents (100%) it was found that the majority of respondents who received Tomato Juice were the respondents with 10 junior high school education levels (53%) and at least 2 respondents with high school education (7.0%).

Table 4.5 Frequency Distribution of Respondents in the Intervention Group of Giving Carrot Juice by Occupation

Work	N	%
Farmer	9	60.0
IRT	6	40.0
Total	15	100

Source: 2020 primary data

Of the 15 respondents (100%) it was found that the majority of respondents who received Carrot Juice were the most in respondents with jobs as farmers 9 people (60%) and the least in respondents with jobs as housewives as many as 6 people (40.0%).

Table 4.6 Distribution of Frequency in the Intervention Group of Giving Tomato Juice by Occupation

Work	N	%
Farmer	12	60.0
IRT	3	40.0
Total	15	100

Source: 2020 primary data

From 15 respondents (100%) it was found that the majority of respondents who received Tomato Juice were the most in respondents with jobs as farmers 12 people (60%) and the least in respondents with jobs as housewives as many as 3 people (40.0%).

Table 4.7 Frequency Distribution of Cholesterol Levels Before Carrot Juice And Tomato Juice Was Given in Hypercholesterolemic Patients

Variable	N	Mean	Standard Deviation
Cholesterol Levels Before Giving Carrot Juice	15	238	1.06
Cholesterol Levels Before Giving Tomato Juice	15	236	1.07

Frequency Distribution of Cholesterol Levels Before Administration of Carrot Juice for the Experimental Group (n=15) in 15 Cholesterolemic patients was 238 g/dl, with a standard deviation of 1.06, and in 15 Cholesterolemic patients before being given Tomato Juice was 236 g/dl, with a standard deviation 1.07.

Table 4.8 Frequency distribution of cholesterol levels after being given carrot juice and tomato juice in hypercholesterolemic patients

Variable	N	Mean	Standard Deviation
Cholesterol Levels After Administration of Carrot Juice	15	199	1.03
Cholesterol Levels After Giving Tomato Juice	15	198	5.16

Source: Primary Data 2020

Frequency Distribution of Cholesterol Levels after Administration of Carrot Juice for the Experimental Group (n=15) showed that the average cholesterol level after administration of Carrot Juice in 15 Cholesterolemic patients was 199 g/dl, with a standard deviation of 1.03, and the average cholesterol level at 15 Cholesterolemic patients before being given Tomato Juice was 198 g/dl, with a standard deviation of 5.16.

DISCUSSION

Based on the results of research conducted in Sukamaju Village in the Kusuri Health Center Working Area for 14 days, it is known that respondents who have cholesterol levels > 200 mg/dl are mostly experienced at the age above 50, the average age is 56-60 years and over, which is 98%. According to the Ministry of Health 2018 at that age, with the aging process and a decrease in metabolic processes accompanied by an increase in carcinogens exposed throughout life, increases the risk of coronary disease.[24] Age > 50 years old blood vessel aging process occurs, the age factor affects the decline in body functions including the occurrence of blood vessel stiffness.

Based on the level of education, it shows that the number of respondents with a junior high school education background for the group giving carrot juice and tomato juice is as much as (53%). According to research by Frankie WM, et al (2018). Education is an important thing in human life because the higher the education, the better the knowledge, so with good knowledge it will be easier for a person to access existing health information. So the information obtained by a person can improve health equality.

From the results of research conducted based on job research, the majority of the work shows the profession of farmers (60%). According to previous research by Sinsuw EML, et al (2018). Work plays an important role in human life. Because a good job will increase a person's income so that with a good income that person can easily meet the needs of his life to support his health. And make it easier for someone to access health facilities to control their health.

Based on the results of the tests carried out, it was found the effect of giving Tomato Juice and Carrot Juice therapy on reducing cholesterol levels in respondents as evidenced by the results of the Independent T-Test there was a sig value of 0.03 so that by using a significant level of 0.05 it can be concluded that there is an average difference the average cholesterol level consuming Tomato Juice

and Carrot Juice, and the result P-value is 0.03 < 0.05, meaning Ha is accepted).

Based on the researcher's analysis of the results of the study, it was proven that the content of Tomatoes and Carrots affected reducing cholesterol levels in the blood. This is because tomatoes contain a lot of antioxidant compounds, including carotenoids, vitamin E, vitamin C, and lycopene. Lycopene is a carotenoid that is needed by the body and is one of the most powerful antioxidants. Lycopene also has benefits for preventing cardiovascular disease.

In addition, tomatoes are also rich in water-soluble fiber and pectin content, especially in the skin which can interfere with the absorption of fat from food.27 Carrots contain Pectin, Glutanion, Minerals (Calcium, Phosphorus, Iron, Potassium, Sodium, Magnesium, Chromium), Vitamins (Beta Carotene, B1, and C), and Asparagine. Beta Carotene has benefits as an antioxidant that maintains health and inhibits the aging process.

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