

The Effect of Giving Gotu Kola Tea and Green Tea on Hypertension Patients in the “Imayah” Elderly Posyandu, Betro Village in Sidoarjo

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ABSTRACT

Hypertension is an increase at the systolic and diastolic blood pressure the exceeds the threshold. This study was *Centella Asiatica L* and *Camellia Sinensis* to contain several compounds, that can work as antihypertensives including ACE inhibitors. So, that can lower blood pressure. The purpose study to determine the effect *Centella Asiatica L* and *Camellia Sinensis* on systolic and diastolic blood pressure in hypertensive patient in Betro Village. The method is a control group design. This research use a purposive sampling technique with 40 people aged 60-80 years. The analyze data is a T-test analysis pair test and Independent T. The result of this study is an examination on systolic and diastolic blood pressure were mostly decreased. There was a significant difference in blood pressure before and after being given *Centella Asiatica L*, with a value of $p=0.064$ and $p=0.003$. And here was a significant difference in blood pressure before and after being given *Camellia Sinensis*, with a value of $p=0.005$ and $p=0.011$. The conclusion, there is an effect of two tea on systolic and diastolic blood pressure in respondent at the Posyandu elderly Ismayah Betro Village.

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1. INTRODUCTION

Hypertension can be defined as a disorder of the circulatory system, especially often found in middle age or older.[1] Hypertension is often found in middle age or older, it can even be said to often occur in the elderly. This is because the structure of the blood vessels changes, such as a narrowed lumen, and stiffness in the blood vessels and reduced elasticity. So the older you get, the greater your risk of developing hypertension. Age is the most influential risk factor for the incidence of hypertension, although age cannot be prevented, there are efforts to reduce the risk of hypertension.[2] Hypertension is characterized by one of which is an increase in blood pressure, which can be checked through an examination of more than 140 mmHg systolic blood pressure and more than 90 mmHg diastolic blood pressure using a mercury cuff and even other digital devices. [3]

The number of people with hypertension is expected to continue to increase. According to data from the World Health Organization (WHO) in 2018 there were around 1.13 billion people in the world

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suffering from hypertension. Which means that 1 in 3 people in the world has a diagnosis of hypertension. So it can be estimated that there are 1.5 billion people affected by hypertension in 2025 and 10.44 million people die from hypertension and its complications every year.[4] Based on the health profile of Sidoarjo district, hypertension sufferers will increase in 2021.[5]

Management of hypertension is by using drugs and lifestyle modifications. Drugs in patients with hypertension can be pharmacological and non-pharmacological. Medicinal plants can affect the reduction of high blood pressure, so it can be used as an alternative therapy to reduce hypertension and is a non-pharmacological treatment for hypertension. One of the non-pharmacological drugs for people with hypertension is traditional medicine from the gotu kola tea plant and green tea. Gotu kola and green tea are traditional medicines used empirically.[6]

The presence of gotu kola and green tea can be used as alternative medicine or traditional medicine for hypertension.[7] So there is a goal to reduce the prevalence of hypertension. Because hypertension is a problem that must be considered and the hypertension rate is still high, especially in developing countries such as Indonesia and one of the regions of East Java, namely Sidoarjo Regency. So there is a possibility that there is a difference in blood pressure between before and after consuming the two teas (Gotu kola and green tea) and affects hypertension sufferers through the patient's blood pressure. Based on data on patients with hypertension and with an existing background, the authors will examine this. This research related to hypertension sufferers, will be carried out on elderly samples, due to the statement that hypertension is often found in someone who is entering old age.

2. METHOD

This research was conducted in March 2020. This type of research is quantitative research. The research design used is *Control Group Design*, with pre-test and post-test. There are treatment and no treatment groups in this research design. This study measures the data of research subjects before being given the intervention and then it will be measured again after being given the intervention.

The population of this study were residents of Betro Village, Sedati District, Sidoarjo City, East Java Province at the "Imayah" elderly posyandu who suffered from hypertension and there were 40 people as research samples aged 50-60 years. The research sample has inclusion criteria, namely patients with mild or moderate hypertension, aged 60-80 years, patients who have agreed with the researchers to be used as research samples and exclusion criteria such as patients with severe hypertension, patients with complicated diseases, undergoing pharmacological therapy, undergoing diet therapy, mental disorders.

The research data will be taken from the results of the research sample using the sampling technique used is the *Random Sampling technique*. And will go through data processing to analyze the data by using statistical tests, namely the dependent t test (paired t test).

3. RESULTS AND DISCUSSION

a. Characteristics of Respondents

The results of this study resulted in the effect of consumption of gotu kola and green tea on blood pressure. Performed on patients with hypertension at the "Ismayah" Elderly Posyandu in Betro Village in 2020.

Table 1
Frequency Distribution of Characteristics of Hypertension Patients at the "Ismayah" Elderly Posyandu in Betro Village in 2020

No.	Variable	F	(%)
1.	Gender		
	a. Woman	29	72.5
	b. Man	11	27.5
No.	Variable	F	(%)
2.	Age		
	a. 61 – 65 years old	24	60

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	b. 66 – 70 years old	12	30
	c. 71 – 75 years old	3	7.5
	d. > 76 years old	1	2.5
3.	Nutritional status		
	a. BB less	3	7.5
	b. Normal range	12	30
	c. BB more	2	5
	d. at risk	3	7.5
	e. Kindergarten Obesity	14	35
	f. Kindergarten II . obesity	6	15
4.	Regular consumption of gotu kola tea		
	a. Regular	9	22.5
	b. Irregular	11	27.5
5.	Regular consumption of green tea		
	a. Regular	13	32.5
	b. Irregular	7	17.5

Based on data on the characteristics of hypertension sufferers at the "Ismayah" Elderly Posyandu in 2020, they are divided by gender, age, and nutritional status. The table above shows that there are 29 patients with hypertension (72.5%) more women than 11 patients with male sex (27.5%). The most patients based on age were in the age group 61-65 years as many as 24 patients (60%) and at least 1 patient in the age group > 76 years. Based on nutritional status, patients with nutritional status of obesity level I are the most sufferers as many as 14 patients (35%) and nutritional status at risk are patients with at least 2 patients (5%) with overweight status.

The gender which is dominated by women is the result of the most suffering from hypertension, according to the results of research at the general polyclinic of the Limo Public Health Center in 2020. There are 60% who suffer from hypertension are female.[8] Patients with hypertension often occur in women, because it has something to do with menopause. In middle age will tend to be more at risk of hypertension. This middle age usually a person has experienced menopause a lot. Where this menopause will experience a decrease in the hormone estrogen which functions as a protector of blood vessels so that damage does not occur. So that menopause is associated with increased blood pressure, which in turn will be diagnosed with hypertension.[9]

There are hypertension sufferers in each age category ranging from 61 to > 76 years old, this shows that hypertension sufferers often occur in the elderly (elderly). The results of this study are the same as those of elderly hypertensive patients at H.Adam Malik Hospital, Medan, with 62.1% between the ages of 60-74. As age increases.[10] physiological function and body resistance will decrease, causing a high risk of developing hypertension.[4] it can be concluded that the older you are, the more you are at risk of suffering from hypertension and even other degenerative diseases.[11]

The nutritional status that suffers the most from hypertension is obesity level I. This is because the condition of the body that is obese will be associated with increasing intravascular and cardiac volumes. The greater the body mass that a person has, the blood for supplying oxygen and food to the body's tissues will also be greater or require a lot. So that it will affect the pumping power of the heart and circulation of blood volume, which will lead to hypertension. [12]

b. Consumption

Based on table 1, it shows that in patients with hypertension seen the most regularly consuming green tea as many as 13 patients (32%) and at least 7 patients who do not regularly consume green tea (17.5%). Between the two, there were 9 patients who regularly consumed pagagan tea (22.5%) and 11 patients who did not regularly consume pagagan tea (27.5%).

Regular consumption of these two teas will affect hypertension sufferers. Because both teas have content that will minimize the occurrence of hypertension. Gotu kola tea comes from the leaves of the gotu kola plant which is beneficial for the body's immune system to increase immunity. The antioxidant

content in the form of flavonoids in gotu kola tea has a role for natural antioxidants that can stimulate the presence of collagen. This will regenerate tissue, increasing blood flow through the walls of blood vessels.[13] Likewise with the role of green tea on hypertension sufferers. The content of polyphenolic compounds in green tea can affect systolic blood pressure and diastolic blood pressure. Blood pressure will decrease if you consume green tea with low doses (.582.8 mg/day) in a long duration for >12 weeks. [14]

c. The Effect of Gotu Kola and Green Tea on Blood Pressure of Hypertension Patients Before and After Consuming

Table 2
Frequency Distribution of Hypertension Patients Based on Blood Pressure Before and After Consuming Pagagan Tea and Green Tea.

Blood pressure category	Before giving				After giving			
	gotu kola tea		Green tea		gotu kola tea		Green tea	
	Amount	(%)	Amount	(%)	Amount	(%)	Amount	(%)
Normal High	4	10	3	7.5	4	10	8	40
Mild Hypertension	8	20	14	35	13	32.5	11	27.5
Moderate Hypertension	3	7.5	3	15	3	7.5	1	2.5
Severe Hypertension	5	12.5	0	0	0	0	0	0

The results from table 2, that the most experienced mild hypertension at the time before giving pagagan tea and green tea. A total of 8 patients before giving gotu kola tea (10%) and 14 patients before giving green tea (35%). Likewise, after giving gotu kola tea and green tea, most of them were found in patients with mild hypertension. A total of 13 patients after giving gotu kola tea and 11 patients after giving green tea.

The results of the study showed that there were differences between each, when after being given treatment for 2 weeks in the form of giving gotu kola tea and green tea. Data on high normal blood pressure showed no difference between blood pressure before and after treatment, namely the administration of gotu kola tea. Before being given gotu kola tea there were 20% with mild hypertension, then moderate hypertension before and after being given gotu kola tea was 32.5%. It shows that there is no change. But there are differences in patients with severe hypertension. Before being given gotu kola tea, there were 12.5% so no one suffered from severe hypertension when after being given gotu kola tea.

The results of before and after being given green tea is that there is a difference in diastolic blood pressure in patients with hypertension. There is a difference in patients with high normal status, as much as 7.5% before being given green tea to 20% after being given green tea. As much as 35% before being given green tea to 27.5% after being given green tea in patients with mild hypertension. For patients with moderate hypertension before being given green tea there were 7.5% to 3.5% after being given green tea. And there were no patients with severe hypertension before and after being given green tea.

d. Systolic Blood Pressure and Diastolic Blood Pressure

Table 3
Description of Blood Pressure Statistics Before and After Giving Gotu Kola Tea and Green Tea

Information	Before Giving				After Giving				
	N	Min	Max	mean	N	Min	Max	Mean	
Giving Gotu Kola Tea	Systolic Blood Pressure	20	130.00	180.00	151.5000	20	130.00	163.00	145.4500
	Diastolic Blood Pressure	20	80.00	100.00	91.5000	20	70.00	97.00	82.6500

Giving Green Tea	Systolic Blood Pressure	20	130.00	172.00	146.9500	20	130.00	164.00	140.7000
	Diastolic Blood Pressure	20	80.00	110.00	93.9500	20	73.00	98.00	86.2000

The results of statistical tests using paired t test resulted in sig (p) = 0.064 < + 0.05 and (p) = 0.003 < = 0.05, meaning that there was a difference in systolic blood pressure in patients who were treated before and after giving tea. gotu kola. And statistical test with paired t test treatment of giving green tea showed the difference between before and after being given green tea. The test results produce sig (p) = 0.005 < = 0.05 and (p) = 0.011 < = 0.05

The independent T-test showed a significant difference in blood pressure before and after being treated in the form of giving gotu kola tea and green tea which had a sig = 0.635 > (0.05) so it means that there was a difference between the homogeneous group and p = 0.184 < (0.05) means that there is a difference between the groups given gotu kola tea and green tea.

Based on the results of research with statistical tests showed that there was a difference in blood pressure before and after the two teas were given. The two teas in question are gotu kola tea and green tea. That's because the content of tea is able to minimize the risk of getting high blood pressure. Antioxidants in tea play an important role for people with hypertension. The role of antioxidants as a blocker and inhibitor of the process of forming a layer of fat that occurs in the walls of blood vessels or arteries, which is usually called *atherogenesis* . With the intake of antioxidants will make the thickening of the walls in all arteries free, due to the attachment of fat or cholesterol. Tea also contains active ingredients in the form of polyphenols, which function to fight free radicals in metabolic processes in the body. The content of flavonoids can be used as an inhibitor of the formation of the enzyme angiotensin transferase. With the formation of angiotensin II will affect blood vessels. Blood vessels will experience vasodilation which causes a decrease in *Total Peripheal Resistance (TPR)* and there will be a decrease in the excretion of water and salt in the kidneys. So there is a decrease in blood pressure. [15]

4. CONCLUSION

Based on the analysis of this study, it can be concluded that there are differences in the number of hypertension sufferers from each category of hypertension sufferers. The categories of hypertension are mild hypertension, normal high, moderate, and severe. From each category there are differences before and after being given treatment. The treatment in question is giving gotu kola tea and green tea. There was a significant difference in blood pressure before and after being given gotu kola tea with p = 0.064 and p = 0.003. Likewise with blood pressure before and after being given green tea there was a significant difference with p = 0.005 and p = 0.011.

It can also be concluded from the results of sig = 0.635 > 0.05 that there is a significant difference in blood pressure before and after being given gotu kola tea and green tea. And the resulting p = 0.184 < (0.05) means that there is a difference between the groups given gotu kola tea and green tea.

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