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The Effect of *Abelmoschus Esculentus* Infused Water Therapy for Hypertension

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ABSTRACT

Keywords:
Abelmoschus esculentus,
Hypertension,
Systolic,
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Background: High blood pressure (hypertension) is an increase in blood pressure in the arteries which is characterized by a systolic more than 140 mmHg and a diastolic more than 90 mmHg. The prevalence of hypertension increase sharply, it is predicted that in 2025 around 29% of adults worldwide suffer from hypertension. The development of complementary therapies for hypertension has been widely developed, one of which is the use of the herbal okra. Okra (*Abelmoschus esculentus*) is a vegetable that has a very low calorie, contains 30 calories in 100 grams, does not contain saturated fat or cholesterol, a source of protein, vitamins and mineral, dietary fiber. It's also contain large amounts of glycine which is responsible for the viscosity of suspension fluids and consistency so that it functions is to control cholesterol levels and lower blood pressure.

Methods: The subject group was observed before the intervention, then observed again after the intervention. Data analysis using Wilcoxon sign rank test with p value = 0.05. The subject is human who has hypertension.

Results: The mean systolic blood pressure in the pretest was 150 mmHg, means diastolic pretest was 90 mmHg. The mean systolic after administration of infused water okra for 7 days was 141 mmHg and diastolic was 83 mmHg. The results of data analysis showed a systolic significance value of 0.000 and a diastolic significance of 0.01.

Conclusions: From the results of the study, it can be concluded that the infusion of water okra (*Abelmoschus esculentus*) has potential antihypertensive activity

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I. INTRODUCTION

Hypertension is an increase in systolic blood pressure of more than 140 mmHg and diastolic blood pressure of more than 90 mmHg which is carried out in 2 measurements with a span of five minutes in a state of sufficient rest or calm. Hypertension is called *the silent killer* because in the initial condition without symptoms so that hypertension is not known and after symptoms appear, it is known that complications may even occur. Target organ damage due to complications of hypertension will depend on the magnitude of the increase in blood pressure and the duration of the undiagnosed and untreated blood pressure condition. Organs that experience complications due to hypertension are the brain, eyes, heart, kidneys, and can also affect peripheral arteries.

Blood pressure is determined by two main factors, namely cardiac output and peripheral resistance. Cardiac output is the product of heart rate and stroke volume. Stroke volume is determined by the strength of myocardial contraction and venous return. This pressure so that blood reaches all organs and tissues, returns to the heart, blood functions to transport oxygen and nutrients⁶. Hypertension is caused by an increase in total peripheral resistance due to narrowing of small arteries. Changes in blood pressure are regulated by baroreceptor reflexes, while the renin-angiotensin aldosterone pathway controls salt, fluid, and blood pressure⁷.

Based on Basic Health Research⁵, the prevalence of hypertension in Indonesia is 34.1%. This has increased compared to the prevalence of hypertension in Riskesdas 2013 which was 25.8%. It is estimated that only 1/3 of cases of hypertension in Indonesia are diagnosed, the rest are undiagnosed.

Hypertension can be prevented by controlling risky behaviors such as smoking, unhealthy diet (less consumption of vegetables and fruit, excessive salt consumption), obesity, lack of physical activity, alcohol consumption, and stress. The success of controlling blood pressure to reach the target has been shown to reduce the incidence of stroke by 30-40% and the incidence of coronary heart disease by 20%. Consumption of salt must be considered, it is recommended 5 to 6 grams per day. However, in daily practice one never calculates how much salt is consumed. In addition to consuming salt, a healthy lifestyle must be done to prevent and even reduce hypertension. A healthy lifestyle can be done in addition to eating healthy foods as well as exercising regularly 30 minutes per day. If you already suffer from hypertension, long-term treatment is needed, even for life, you must take medication regularly as recommended by the doctor even though there are no symptoms. The management of hypertension by pharmacological therapy still raises doubts among individuals, especially regarding the high cost, non-compliance of patients in the treatment process or perceptions of the side effects of a drug so that in addition to pharmacological treatment, many people also take non-pharmacological treatment. One of the non-pharmacological therapies is using herbal medicines, namely natural ingredients. Various herbal therapies that have been scientifically proven to lower blood pressure are by using okra (*Abelmoschus esculentus*)⁴.

Okra is one of the vegetables¹⁰ it is very low in calories, this plant which is also referred to as gumbo contains only 30 calories⁹ per 100 g and contains no saturated fat or cholesterol. Okra is a vegetable source that is rich in fiber, minerals, and vitamins, so it is often recommended by nutritionists for cholesterol control and weight loss programs, improves heart function, acts as an antihypertensive, helps stabilize blood sugar by regulating the rate at which sugar is absorbed from the intestines, and relieves stress, constipation¹. This study aims to analyze the effectiveness of noni fruit tea in lowering blood pressure with okra as herbal ingredients.

II. METHOD

The research design is used *Pre Experiment research design* with *one group pre-post test design*¹². This research was conducted on human subjects by giving okra infused water. The sample in this study were some people with hypertension in Jengglungharjo Village, Tanggunggunung Tulungagung District. The samples in this study were 30 respondents. The group of subjects was observed by measuring their blood pressure before the intervention, then given therapy with infused water okra at a dose of 200 cc three times a day for seven days and on the eighth day the respondents would be observed by measuring blood pressure as a measurement of the post test value. *Data analysis using Wilcoxon sign rank test with p value = 0.05*.

III. RESULTS AND DISCUSSION

The results of the study obtained data on the distribution of respondents according to gender, age and weight distribution. The following is the respondent's characteristic data:

Table 1. Distribution of respondents by sex, age and weight distribution

No.	Characteristic	Frequency	Percentage (%)	□
1	Ages :			
	40-50 years	2	6.7%	
	>50-60 years	22	73.3%	
	>60 years	6	20%	
13	Respondents			30 (100%)
2	Gender			
	Male	17	56.7%	
	female	13	43.3%	
	Respondents			30 (100%)
3	Weight			
	50-60 kg	23	76.7%	
	>60 kg	7	23.3%	
	Respondents			30 (100%)

The average age of the respondents was 57 years with the lowest age being 45 years and the oldest age being 64 years.

Table 2. Blood Pressure Measurement Results Before and After Treatment

	Before		After	
	systole	diastole	systole	diastole
mean	150.16	89.50	140.50	83.33
median	150.00	90.00	140.00	80.00
Std. Deviation	9.33	6.21	9.03	6.47
Minimum	140.00	80.00	120.00	70.00
Maximum	170.00	100.00	160.00	90.00

Table 4. Statistical Test Results of the Effect of Treatment

	systole	diastole
P value	0.000	0.001

The statistical tests of this research is Wilcoxon showed that the p value was 0.000 for the effect of treatment on systolic blood pressure and p value of 0.001 for the effect of treatment on diastolic blood pressure.

Based on the results of the study, it was found that the average systolic blood pressure before being given infused water okra therapy was 150.16 mmHg while the average systolic blood pressure after being given therapy was 140.5. The average diastolic blood pressure before being given infused water therapy was 89.5 while the average diastolic blood pressure after being given therapy was 83.33. The results of statistical testing with Wilcoxon, the systolic blood pressure obtained a significance result of 0.000 while the diastolic blood pressure obtained a significance result of 0.001.

Infused water okra contains active compounds that can prevent oxidative stress, namely a disturbance in the balance between the production of oxidants and antioxidants related to free radicals. Plants contain secondary metabolites that have potential as antioxidants, including phenolic compounds, alkaloids, steroids, terpenoids and flavonoids. Phenol compounds can reduce free radicals by dropping their electrons through the hydrogen atom of the hydroxyl group. Antioxidants help increase HDL levels in the blood and suppress LDL secretion. Secondary metabolites found in okra (*Abelmoschus esculentus* L) include flavonoids, alkaloids, glycosides, tannins and steroids/terpenoids. Alkaloid compounds, saponins, quercetin and flavonoids that play a role in lowering cholesterol levels in the blood.

Quercetin can reduce *de novo* synthesis of fatty acids, thereby affecting cholesterol biosynthesis and lipoprotein formation. The fiber in okra can affect hypolipidemia, stabilize blood sugar levels by determining the absorption of blood sugar levels by the intestine and reduce the

assimilation of sugar through the intestine. Okra seeds contain bioactive peptides that function as ACE inhibitors that can inhibit ACE ².

Based on the results of the statistical tests used to analyze *pre-test* and *post-test* blood pressure with a significant level of $\alpha = 0.05$, the results were $P = 0.000$ for systolic blood pressure and 0.001 for diastolic blood pressure. This shows that H_0 is rejected and H_1 is accepted because the value of $p \leq 0.05$. This means that there is an effect of giving infused water okra (*Abelmoschus esculentus*) to decrease systolic blood pressure and diastolic blood pressure in respondents. This happens because the content of bioactive substances and protein in okra seeds has benefits as an ACE-inhibitors block the action of ACE, to prevent the conversion of angiotensin I to angiotensin II. Angiotensin II is a vasoconstrictor and stimulates aldosterone secretion. Blocking its action reduces peripheral vascular resistance (afterload), which lowers blood pressure ². ACE inhibitors also inhibit the degradation of bradykinin and stimulate the synthesis of substances that can cause vasodilation, including prostaglandin E₂ and prostacyclin. Increased bradykinin enhances the blood pressure-lowering effect of ACE inhibitors, but has side effects including dry cough. ACE inhibitors are very effective in preventing regression of left ventricular hypertrophy by reducing direct stimulation by angiotensin II to cardiac muscle cells. In the case of hypertensive patients, the mechanism of action of ACE inhibitors lowers blood pressure through several mechanisms, including reducing peripheral vascular resistance, decreasing sympathetic activity, reducing Na and water retention ². Using alternative complementary therapies on a regular basis, one of which is consuming okra infused water can also reduce systolic and diastolic blood pressure so that blood pressure is always stable which would be better if balanced with diet and regular exercise. If this is complied with by people with hypertension, blood pressure will be at normal or stable limits.

IV. CONCLUSION

The results showed that there was an effect of infused water okra on systolic and diastolic blood pressure because Okra is a vegetable plant that contains seed protein that is able to release ACE inhibitory peptides.

V. REFERENCES

- [1] Adetuyi, AU Osagie and AT Adekunle. 2011. *Nutrient, antinutrient, mineral and zinc bioavailability of okra Abelmoschus esculentus (L) Moench Variety*. *American Journal Of Food And Nutrition* 1(2): 49-54
- [2] Castillo, 2017. *Antihypertensive property of the peptic and chymotryptic hydrolysates derived from the crude protein extract of okra [Abelmoschus esculentus (L.) Moench] seeds*. *International Food Research Journal* 24(6): 2586-2592
- [3] Halimatuss'adah, F., Fitriani, VY, and Rijai, L. 2014. *Activity of cempedak (Artocarpus champedan) and bandotan (Ageratum conyzoides L) leaves*. *J. Trop. Pharm. Chem.* 2(5): 248-251
- [4] Hernandez-Ledesma, B., Contreras, MDM and Recio, I. 2011. *Antihypertensive peptides: production, bioavailability and incorporation into foods*. *Advances in Colloid and Interface Science* 165: 23-35
- [5] Riskesdas, 2018. *Ministry of Health*. Jakarta
- [6] Tjay, T. H, and Rahardja, K., 2002, *Important Drugs, Usefulness and Side Effects, Edition V, 508-535, Publisher PT Elex Media Komputindo Gramedia Group, Jakarta*. J. Clerk Maxwell, *A Treatise on Electricity and Magnetism, 3rd ed., vol. 2*. Oxford: Clarendon, 1892, pp. 68-73.
- [7] Thomas, SHL, 2003, *Hypertension, in Walker, R., Edwards, C., Clinical Pharmacy and Therapeutics, 3rd Ed, 265-275, Churchill Livingstone, Spain*. K. Elissa, "Title of paper if known," unpublished.

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Oyedeji et al. " Acute and sub-chronic antihypertensive properties of leaf (TOL) and root (TOR) ", Transactions of the Royal Society of South Africa, 2019

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