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**Original Research Article**

# The influence of rosella flower tea on blood pressure reduction in hypertension patients

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## ABSTRACT

**Background:** Hypertension is called the silent killer because it does not provide specific symptoms, it can increase the incidence of strokes, heart attacks, chronic kidney disease if not controlled and controlled properly. Management of hypertension is generally with pharmacological therapy that has not shown improvement. Non-pharmacological treatment using rosella flower tea which functions to open blood vessels wider, reduce blood viscosity and increase urine production so as to reduce blood volume. The purpose of this study was to study the effect of rosella tea on reducing blood pressure in hypertensive patients.
**Methods:** This study uses a quasi-experiment design with the two-group pre-test and post-test design approach. This research was conducted on patients with hypertension at the Padang city health center with an intervention group of 16 respondents and a control of 16 respondents. Data analysis in this study used univariate and bivariate using independent t-test statistics.
**Results:** The results of the study showed the average blood pressure in the systolic pretest intervention group 147.81 for 94.69 diastole and posttest systole 129.06 posttest diastole 78.75 while the control group for systole pretest 154.6 for diastole 96.25 and posttest without posttest treatment systole 129.06 postest diastole 78.75. Obtained a p value 0,000 statistical test for systole and a p value 0,000 diastole.
**Conclusions:** There is an effect of rosella flower tea on reducing blood pressure in patients with hypertension at the Padang city health center.

**Keywords:** Hypertension, Rosella flower tea, Decreased blood pressure

## INTRODUCTION

Hypertension has a major impact on the burden of cardiovascular disease worldwide.[1] Morbidity and mortality of hypertension is very high because it can damage a number of important organs in the body. People with hypertension have twice the risk of suffering from CAD, four times more suffering from congestive heart failure and seven times higher stroke than people who have normal blood pressure.[2] Hypertension is called the silent killer because it is often without complaints, so patients do not know that they have hypertension and it is only known after complications occur.[3]

Data from the world health organization (WHO) in 2015 showed that around 1.13 billion people in the world have hypertension, meaning that 1 in 3 people in the world is diagnosed with hypertension. The number of people with hypertension continues to increase every year, it is estimated that in 2025 there will be 1.5 billion people who are affected by hypertension, and it is estimated that every year 9.4 million people die from hypertension and its complications.[4]

Riskesdas (2018), the death rate due to hypertension was ranked 5th out of ten causes of death in Indonesia with an average hypertension prevalence of 34.1%.[5] West Sumatra ranks 5th out of the number of hypertensions in Indonesia with a prevalence of 484,345 cases. The highest case of hypertension in the city of Padang is in the working area of the Andalas community health center with 2016 visits totaling 4678 and increasing to 9,587 in 2018, the visit ranks first among several other disease problems.[5]

Treatment of hypertension is generally done with pharmacological therapy which aims to reduce blood pressure but often has side effects of drugs that aggravate kidney function. Existing drugs for hypertension have not shown their health status. Non-pharmacological treatment methods are expected to be able to complement pharmacological treatment in lowering blood pressure by using herbal medicine for rosella flower tea.

Rosella flower (*Hibiscus Sabdariffa L.*) has the same ability as a blood pressure-reducing drug, which can open blood vessels wider, reduce blood viscosity and increase urine production so as to reduce blood volume. Even rosella can control mild or moderate types of hypertension. Rosella tea can work faster and certainly safer and better than medicine.[6,7] The chemical content of rosella are organic acids, flavonoids (flavanols and anthocyanins), calcium, niacin, riboflavin, iron, and vitamins A and C.[8] The active compound in rosella helps smooth digestion by reducing the degree of viscosity (thickness) of blood. Furthermore, the work of the heart pumps blood more lightly and automatically lowers blood pressure.[9-12] How to make rosella tea only need a glass of hot water, sugar and of course rosella flowers that have dried, no more than ten minutes of rosella tea is ready to be enjoyed and this tea is taken 2 times a day every day until blood pressure returns to normal. Provision of standardized rosella calyx extracts containing 9.6 mg of anthocyanin (the natural red color of rosella flowers) every day for 12 days, can reduce blood pressure that is not significantly different from captopril 50 mg/day. Standardized rosella is made from 3 dried roselle flowers and 200 liters of water.[13] Research conducted by Seck et al can reduce blood pressure by giving rosella tea flowers and other studies state that using rosella tea can reduce blood pressure.[14-20]

The purpose of this study was to study the effect of rosella flower tea on reducing blood pressure in people with hypertension.

## METHODS

This research is a quantitative study with a quasi-experimental design with a two-group pretest and posttest design approach. This research was conducted at Puskesmas Padang city. The population in this study was 7,670 hypertensive patients in the working area of the public health center with a sample of 16 interventions and 16 controls. This study was conducted on March 5 to May 5 2020. With the inclusion criteria for mild and moderate hypertension patients and 30-60 years old, while the exclusion criteria were respondents with complications. This study used rosella flower tea which was used dried roselle flower petals which was consumed 2 times a day for 2 weeks by measuring the blood pressure of the respondents before and after being given rosella flower tea. Normality test with a normal distribution used Shapiro-wilk. Data were distributed in narrative and tabular form using an independent t-test.

## RESULTS

Table 1 found that more than half of the 78.13 respondents were female.

**Table 1: Gender frequency distribution of rosella flower tea in patients with hypertension (n=32).**

| Gender | Frequency (F) | Percentage (%) |
|---|---|---|
| **Male** | 7 | 21.87 |
| **Female** | 25 | 78.13 |

**Table 2: The average delivery of rosella flower tea to reduce blood pressure in patients with hypertension in the Padang city health center in the intervention group and control group.**

| Variable | Pre-test | | Post-test | |
|---|---|---|---|---|
| | Control | | Intervention | |
| | Mean | N | Mean | N |
| **Pre-test systole** | 154.69 | 16 | 147.81 | 16 |
| **Pre-test diastole** | 96.25 | | 94.69 | |
| **Post-test systole** | 147.19 | | 129.06 | |
| **Post-test diastole** | 94.06 | | 78.75 | |

**Table 2: The Effect of rosella flower tea on reducing blood pressure in patients with hypertension in Padang city health center in the control and intervention groups.**

| Variable | Mean | SD | P value | N |
|---|---|---|---|---|
| **The mean decreases in Systolic blood pressure in patients with hypertension by the administration of rosella tea to the control and intervention groups** | 18.125 | 2.894 | 0.000 | 32 |
| **The mean decreases in blood pressure diastole in patients with hypertension by the administration of rosella tea to the control and intervention groups** | 15.313 | 1.752 | 0.000 | 32 |

Table 2 above proves that the average value of hypertension reduction in the systolic pre-test intervention group is 147.81 for 94.69 diastoles while the average post-test systole is 129.06 and post-test diastole 78.75. and above proves that the average value of hypertension reduction in the systolic pretest control group is 154.69 for 96.25 diastole while the mean post-systole 147.19 and post-test diastole 94.06.

Table 3 above shows that the results of statistical tests with a p value of 0.000 ($p<0.05$) means that there is an influence of the influence of the influence of rosella flower tea on reducing blood pressure in hypertensive patients at the Padang city health center.

## DISCUSSION

Based on the results of the study showed that the statistical test results obtained p value of 0.000 ($p<0.05$) means that there is an influence of the influence of the influence of rosella flower tea on reducing blood pressure in patients with hypertension

This study is in line with Sumirat et al with the results of the analysis of the influence of the use of rosella flower tea on reducing blood pressure between hypertensive patients given rosella flower tea with hypertension sufferers who were not given rosella flower tea. blood pressure in patients with hypertension. By using the t-test of two paired samples using the two-way test, systole was obtained with a significant level of 0.05/2 ($p<0.025$), $p=0.000$, which means that H0 was rejected and H1 was accepted. Diastole also with a two-way test, with a significant level of 0.05/2 ($p<0.025$), obtained $p=0.000$, which means it does not reject.[22]

In this study the experimental group was given 3 dried rosella flowers which were given once a day every morning and given for 12 days. Roselle has a hypotensive and diuretic effect. Rosella is used as a folk medicine; rosella has a mild laxative effect and has the ability to increase urinary frequency because it has two types of diuretics namely ascorbic acid and glycoside acid. Because rosella contains citric acid, so it is used as an herbal that has a cooling effect, the ability is caused because it can increase blood flow in the skin layer and dilate pores to cool the skin. The leaves and flowers are used as a tea for boosting digestion and kidney function. Flowers and seeds are used for diuretics, laxatives and tonics. Thus, rosella has the qualification as an herbal plant because it has been used as a drug in reducing high blood pressure.[22]

Besides the chemical content of rosella, namely organic acids, flavonoids (flavanols and anthocyanins), calcium, niacin, riboflavin, iron, and vitamins A and C. Active compounds in rosella help facilitate digestion by reducing the degree of viscosity (thickness) of blood. Furthermore, the work of the heart pumps blood more lightly and automatically lowers blood pressure.[24]

## CONCLUSION

There is an effect of rosella flower tea on reducing blood pressure in patients with hypertension at the Padang city health center.

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