

# The Effectiveness of Giving Rosella and Celery Flowers on Hypertension in the Elderly

Farida Mentalina Simanjuntak<sup>1</sup>, Tetty Rina Aritonang<sup>2</sup>, Rupdi Lumban Siantar<sup>3</sup>

<sup>1,2,3</sup>Stikes Medistra Indonesia, Bekasi, Indonesia

Email: [faridams81@gmail.com](mailto:faridams81@gmail.com)

## Abstract

Hypertension is known as the silent killer because it cannot be predicted and kills slowly. It is estimated that one in 7 causes of death is caused by hypertension (7 million per year). Hypertension can be prevented and maintained by consuming herbal medicines, one of which is rosella and celery. In this analysis, the efficacy of the rosella and hypertension celery mixture in the Matraman sub-district of Puskesmas, was determined. The method of study was pre-test and post-testing with control experimental one-group configuration. The sample size was 05 people and computerized statistical tools used to analyze t combined with. Results showed a blend of rosella and celery infusion, but this was not important, as regional pressure decreased both systole and diastole. Significant systole and diastole values 0.196 and 0.308 > 0.05 are indicated in this context.

**Keywords:** *Hypertension, Rosella, Celery, Elderly.*

## A. INTRODUCTION

The condition of the heart and blood vessels is hypertension, or excessive blood pressure. The increase in systolic and diastolic blood pressure distinguishes hypertension (Kannel et al., 1971). If blood pressure exceeds 140/90 mmHg, one is said to have hypertension (Mancia et al., 1997). High blood pressure is one in seven deaths per year (7 million per year). It can also harm the heart, eye, brain and kidney (Risnasari, 2015). Baroreceptors, flushing body volume regulation, renin-angiotensin system and self-regulation regulate the function of hypertension in the body. Someone with high blood pressure promotes the release of the renin and angiosinogens hormones. Angiotensinogen is an inactive blood protein that is made in the hepatitis (Muhummadun, 2010).

Hypertension is a significant cause of stroke, heart disease, and kidney failure. Primary hypertension occurs in 90-95% of cases and tends to increase with time. Risk factors include obesity, stress, a relaxed lifestyle, and smoking (Yulanda & Lisiswanti, 2017). This disease usually does not show real symptoms, and at an early stage, it has not caused severe problems to the health of the sufferer (Abadi, 2013).

The assumption that is still widely circulating in the community is that high blood pressure only needs to be lowered when disturbing, such as tension necks and dizziness. This lousy assumption needs to be straightened out. The harmful effects of high blood pressure do not come immediately but only appear after a decade (Jayanti et al., 2017). Hypertension can interfere with the function of various organs, such as the kidneys, brain, eyes, and even the heart. High blood pressure that is left unchecked and continues to increase will cause various complications, such as myocardial infarction, kidney failure, encephalopathy, and damage to the eye's cornea (Ardiansyah, 2012).

Joint pain is a common inflammation characterized by joint swelling, redness, heat, pain, and movement disorders. In this situation, the elderly are very disturbed if more than one joint is affected (Syahrini et al., 2012). Hypertension and joint pain do not always have to be treated with medical drugs. Still, many people take some precautions, namely by changing their lifestyle to an upbeat style to consume healthy & nutritious foods. Several people consume rosella and celery flowers for the treatment of blood pressure and gout. The active substances that play the most role in roselle flower petals include anthocyanins and anthocyanin compounds contained in the flavonoid class. This treatment is called herbal medicine (Andika et al., 2014).

The Elderly is the final stage of development in humans, with an average age of more than 60. When entering old age or the elderly will decline in all aspects, such as cognitive, physical, psychosocial, and economical. (One of the things that often increases in the elderly is hypertension. For someone who has reached the age of the elderly, the production of prostacyclin hormones and thromboxane is disturbed. The effect of resistance in the body so that the impact of the blood will decrease, and then it can clog the blood vessels. Blood vessels that experience blockage can cause blood flow to be interrupted and experience an increase in blood pressure (Zaenurrohmah & Rachmayanti, 2017).

As a person gets older, there is a tendency for various functional capacities to decrease both at the cellular and the organ level, leading to degeneration in line with the aging process (Maryam, 2008). In the elderly, there is a decline in cells due to the aging process, resulting in organ weakness, physical deterioration, the emergence of various diseases such as increased joint pain (Utomo, 2010).

This situation requires regular treatment to lower blood pressure and joint pain, not necessarily using medical drugs to reduce blood pressure and joint pain. Herbal remedies can be done to lower blood pressure and joint pain, using rosella and celery. Antiosanin, a bioactive component found in rosella flowers, affects reducing blood pressure and joint pain (Wiratami, 2019). Meanwhile, in celery that can lower blood pressure are flavonoids, apigenin, vitamin C, phytosterols, and vitamin K, which can play a role in fat metabolism, diuretic effects, and maintain elasticity of blood vessels (Handayani & Widowati, 2020).

The objective of this study is to assess the efficacy of Rosella infusion (*Hibiscus sabdariffa* Linn) and elder celery infusion in the Puskesmas sub-district Matraman. This research aimed specifically to detect the efficacy of providing hypertension rosella and celery flowers, so that it was known whether the two herbs' mixture was effective as a herbal alternate to lower elderly blood pressure.

## **B. LITERATURE REVIEW**

### **1. Hypertension**

Bladder blood pressure is a medical concept. This condition can cause several health complications which put lives at risk while raising the risk of cardiac disease, stroke and even death (Saputra & Fitria, 2016). The force of blood circulation on the walls of the artery of the body, including the main blood vessels of the body, can be interpreted as blood pressure. The extent of this pressure depends on blood vessel resistance and how hard the heart works. The higher the blood pressure the more blood the heart pumps, the closer the arteries. Routine blood pressure controls can detect hypertension (Sulistyarini, 2013).

Type in two numbers the effects of blood pressure. When the heart contracts or strikes, the first or systolic number is the pressure in the blood vessels. Meanwhile, when the heart is between beats, the second or diastolic number reflects pressure in the blood vessels. A individual may be told that he or she has hypertension when the systolic reading of blood pressure on the measurement shows an impact over 140 mmHg for two consecutively days (Moscowitz, 1998).

As you get older, a person will have a higher chance of developing hypertension. Several factors can increase the risk of hypertension, namely:

- a. Are over 65 years of age.
- b. Excessive consumption of high-salt foods.
- c. It is overweight or obese.
- d. There is a family history of the same medical conditions.
- e. Less intake of fruits and vegetables.
- f. Not exercising rarely.
- g. Consuming too many foods or drinks that contain caffeine.
- h. Consuming alcoholic beverages.

An individual with high blood pressure will have many symptoms such as headaches; limp, problems of the eyesight; chest pain; breathing difficulties; arrhythmia and blood presence in the urine. Silent or secretly killing illness, hypertension has the expression silent murder. This is because persons with high blood pressure usually do not have any signs unless they have too high blood pressure (Marliani, 2013).

## 2. Rosella

Rosella flower is a flower with the Latin name of *hibiscus sabdariffa* from the African continent. Rose blossoms are known in Indonesia as rose blossoms or brackish acids. Rosella flowers have good health quality in addition to decoration. There are many vitamins in this red flower, including vitamin C, vitamin B3 (niacin) and vitamin B9 (folate). The spectrum is also included in roselle flowers, including iron, calcium, zinc, sodium, phosphorus, magnesium and potassium (Sumirat, 2017).

Rosella flowers are typically tasted as tea. The advantages are warm or cold for roselle tea. Besides making tea, you can also enjoy the benefits of red roselle in other refined ways such as salads, jams and other items. These are the health advantages of roselle flowers:

- a. Facial skin protection, Rosellas can protect the skin from harmful free radicals and ultraviolet radiation. By diligently drinking roselle tea, you can feel the benefits of roselle for your skin. Roselle tea contains essential proteins, amino acid and vitamin C, making the skin more sound and luminous.
- b. Overcoming Infection and Inflammation The content of vitamin C, high enough in roselle, can increase immunity. Vitamin C can treat several diseases caused by bacterial infection or inflammation. Also, this vitamin C content is antibacterial and anti-inflammatory.
- c. Anxiety reduction. Roselle flowers may also be used for anxiety and depression reduction. This is because of the roselle flavonoids. There are antidepressant effects in the flavonoids, so that you can be calmer and more comfortable.
- d. The next advantage of red roselle flowers in preventing tumors and cancer is tumor prevention and cancer. This is due to the fact that roselle flowers contain antimicrobials and antioxidants.
- e. Digestive tract maintenance. Roselle flowers can preserve and enhance digestive tract health. Bowel movements will begin to resolve constipation by taking roselle flowers.
- f. Preventing Liver Disorders The antioxidant content in roselle flowers can ward off free radicals and neutralize toxins. This can help the liver work lighter.
- g. Blood pressure decrease one of the causes of the body's medical issues is high blood pressure. A consumption of roselle flowers will help the body keep blood pressure and return it to normal.
- h. Weight loss you may use roselle flower tea to lose weight as a slimming tea. Roselle can inhibit amylase production so that glucose and starch absorption can be reduced. If glucose and starch absorption has decreased, caloric consumption can be reduced in the body and body weight reduction.
- i. Menstrual stimulus the final advantage of roselle is that menstruation can be stimulated. Roselle flowers can influence the hormone estrogen to boost menstrual activity.

Rosella has excellent potential to be developed into anti-hypertensive herbal medicine. Rosella flowers can quickly grow around the community. Planting, caring for, and processing rosella flowers is relatively easy. But few people use it. One of the ingredients in Roselia petals is flavonoids, namely anthocyanins. Flavonoids are one of the secondary metabolite compounds usually present in roots, stems, leaves, petals, seeds, and others.

Meanwhile, anthocyanins are pigments of red to blue petals. The flavonoids present in secondary metabolites have various effects, such as working as a potent inhibitor of respiration, as an antioxidant which is also helpful as a treatment for liver dysfunction and reduces blood clotting. Anthocyanins belong to a class of flavonoid compounds, which are the largest group of natural fat-soluble plant pigments responsible for giving color to flowers, fruits, and vegetables. Rosella anthocyanins can also be beneficial to health as a source of antioxidants. This is because these polyphenolic compounds are glycosides derived from polyhydroxy and polymethoxy (Putra, 2013).

### **3. Celery**

Celery leaves are commonly used in Indonesia as an addition to cooking. Usually fresh celery leaves are chopped and spread over the plates. It does not only make food savory, it also offers many health benefits of celery leaves. Celery leaves have a relatively high antioxidant content, according to analysis. Antioxidants are compounds that reduce the damage caused by oxidation and free radicals to the body's cells. The variety is commonly used as a component of medicine as celery leaves (Saputra & Fitria, 2016).

Different experiments have been carried out to demonstrate the advantages of celery, including seeds, stems and celery leaves. Below are some of the health benefits of celery leaves to better understand:

- a. Blood pressure decrease. The findings of studies suggest that celery extract helps people with hypertension to reduce blood pressure. Celery is also known to contain different nutrients including vitamins and minerals, which will keep your kidneys healthy. This material can be transformed into supplements in the form of juice.
- b. Prevent cancer. Prevent cancer Extract of celery leaf is often sometimes used as an anti-cancer treatment. The capacity for inhibition of growth and spread of the cancer cells around the stomach was shown by celery leaf extract in one study.
- c. Digestion is smooth. The contents of pectin-based polysaccharides in celery blades may contribute to digestion, avoid ulcers and repair of damaged stomach foliage.

- d. Menstrual discomfort relieves several studies show that eating celery seed products with a mixture of several other ingredients can minimize the severity and length of the menstruation pain.
- e. Mücken repel Mosquito repellent gel with celery extract can be longer than 4 hours, according to analysis. The celery's efficacy is relative high in repelling mosquitoes with an ingredients mix.

The elements in celery that can lower blood pressure are flavonoids, apigenin, vitamin C, phytosterols, and vitamin K, which can play a role in fat metabolism, diuretic effects, and maintain elasticity of blood vessels.

#### **4. Research Hypothesis Formulation**

H0 = There is no significant difference between pre\_sistole and post-systole BP after administering a mixture of rosella and celery.

H1 = There is a significant difference between pre\_sistole and post-systole BP after giving a mixture of rosella and celery.

H0 = There is no significant difference between BP pre\_diastole and BP post diastole after giving a mixture of rosella and celery.

H2 = There is a significant difference between BP pre\_diatole and BP post diastole after giving a mixture of rosella and celery.

#### **C. METHOD**

This research is experimental, an observational study of the effects of roselle and celery on hypertension on natural ingredients. This research was performed at the Health Center of Matraman District. The research takes one year to complete, effective from January to December 2020. The sample size is 05 persons using computerized statistical tools for comparative analysis with paired t-test.

#### **D. RESULT AND DISCUSSION**

The characteristics of the respondents in this study were the elderly category, amounting to 5 people, with five male respondents (100%). Tambayong (2000) explains that the incidence of men experiencing hypertension is higher than women. Still, in middle age and later age, the incidence in women begins to increase, so that at the age of 65, the incidence in women is higher; this is due to function. The estrogen hormone in middle age women begins to decline, where this hormone plays a role in increasing HDL (High-Density Lipoprotein) levels, which is a supporting factor for atherosclerosis.

**Table 1 Treatment of Steeping Rosella and Celery**

No	Name	BP Pre		BP Post	
		Systole	Diastole	Systole	Diastole
1	Mr. S	141	83	140	70
2	Mr. ST	120	83	124	80
3	Mr. P	117	68	114	70
4	Mr. SD	172	102	158	82
5	Mr. SO	117	49	103	55

Based on table 1 above, the test was carried out using comparison with the paired t-test using SPSS statistical software, including pre-test and post-test blood pressure for systolic and diastolic blood pressure. Here are the results of measurements of systolic blood pressure before and after steeping rosella mixed with celery as below:

**Table 2 Pre-test and post-test systole**

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	BP_Pre	133.4000	5	23.79706	10.64237
	BP_Post	127.8000	5	21.68410	9.69742

In table 2 above, you can see the results of the pre-test and post-test of the two samples studied, namely the pre\_sistole and post\_sistole values. The mean value was 133.4000, while for the post-systole, the mean value was 127.8000. The value of std. deviation for pre\_sistole is 23.79706 and for post\_sistole is 21.68410. Finally, for the std. error, the mean pre\_sistole value is 10.64237, and the post\_sistole is 9.69742.

Because the average value of systolic pressure measurement between before and after the treatment of celery, the Pre\_sistole TD was 133.4000 > 127.8000 Post\_sistole TD, it can be seen descriptively that there is a difference in the average systolic BP results after steeping rosella mixed with celery.

**Table 3: Sistole BP Significance Test**

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 BP_Pre - BP_Post	5.60000	8.08084	3.61386	-4.43369	15.63369	1.550	4	.196

Based on the above Table 3, the Sig value is found to be 0.196. The decision-making guidelines for pairing the t-test sample are based on the significance value of (Sig.) the SPSS performance data, according to Singgih Santoso (2014). If < 0.05, then H0 and H1

are rejected and vice versa if Sig. (2 tailed) is rejected. Since  $0.196 > 0.05$  is the Sig value (2-tailed),  $H_0$  is accepted and  $H_1$  has been refused.

**Table 4 Pre-test and post-test of diastole**

		Paired Samples Statistics			
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	BP_Pre_Diastole	77.0000	5	19.76107	8.83742
	BP_Post_Diastole	71.4000	5	10.71448	4.79166

In table 4 above, we can see the descriptive statistics of the two samples studied, namely the pre-diastole and post-diastole values. For pre-diastole, the mean or mean value was 77,0000, while for the post-diastole score, the mean value was 71.4000. The std. deviation value for pre\_diastole is 19.76107 and for post\_diastole is 10.71448. Finally, for the std. error, the mean pre\_diastole value is 8.83742, and the post\_diastole value is 4.79166.

Because the average value of the pressure measurement in the systolic area between before and after the treatment of celery, the Pre\_diastole TD was  $77,0000 > BP\ 71,4000$  Post\_diastole, it can be seen descriptively that there is a difference in the average diastolic TD results after giving the mixture of rosella and celery.

**Table 5 Test for the significance of Diastole BP**

		Paired Samples Test					t	df	Sig. (2-tailed)
		Paired Differences							
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	BP_Pre_Diastole - BP_Post_Diastole	5.60000	10.73778	4.80208	-7.73272	18.93272	1.166	4	.308

Based on table 5 above, the Sig (2-tailed) value of 0.308 is obtained, which means what is described in table 3, the sig (2-tailed) value of  $0.308 > 0.05$ , then  $H_0$  is accepted, and  $H_2$  is rejected. The results showed the mean mean value for pre\_systolic BP was 133.4000 mm Hg, and a post-systolic BP was 127.8000 mmHg, which means an average decrease in systolic BP of 10 mm Hg after being given celery decoction for the elderly. For TD Pre\_diastole, it was obtained a value of 84.800, and TD Post-diastole, it was got a weight of 85.400, which means that there was a difference in the average TD diastole between before and after steeping a mixture of rosella and celery. The Sig (2-tailed) value ( $0.196 > 0.05$ ) was obtained from the systolic blood pressure measure, meaning that  $H_0$  is approved and  $H_1$  is refused. This ensures that the deterioration of the systolic blood pressure is not important. In the meantime the Sig. (2-tailed) for diastole is  $0.308 > 0.05$  which means  $H_0$  is acceptable and  $H_2$  is refused. It is also significant that for Diastole TD, there is no significant difference in the provision of celery for the elderly. The results of the above research contradict research conducted



by Munim et al. (2008), where steeping a mixture of rosella and celery had a significant effect on reducing blood pressure.

## E. CONCLUSION

Giving a mixture of rosella and celery infusion to the elderly at the Matrama sub-district health center showed a difference between before and after treatment. Still, the difference was not significant for both systolic and diastolic blood pressure. This can be seen from the significance value (2-tailed) for systole and diastole, which are 0.196 and 0.308 > 0.05. This study has limitations with inadequate sample sizes, so it is recommended for further research to take more samples to represent the population, which exists.

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