



## GIVING CELERY LEAF BOILED WATER IN LOWERING BLOOD PRESSURE IN THE ELDERLY WITH ESSENTIAL HYPERTENSION

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### ABSTRACT

One of the non-communicable diseases is a cardiovascular disease that causes the 5th highest death in Indonesia, characterized by a person's condition of having an abnormal increase in blood pressure in the arteries. This study was to determine the administration of celery leaf decoction water in lowering blood pressure in the elderly with essential hypertension in Sidoluhur village, the working area of the Godean I Health Center, Sleman Regency. The type of quantitative with a quasi-experimental approach of pretest-posttest control group design 2 groups on February 6-March 02, 2024 for the elderly with essential hypertension. The data collection techniques carried out by the researcher using primary data and secondary data totaling 110 respondents and data analysis using the wilcoxon sign rank test. The pre-test intervention group had morning systolic blood pressure 154.40 mmHg, morning diastolic blood pressure 79.86 mmHg. The average blood pressure of the elderly on the post-test 145.98 mmHg, afternoon systolic blood pressure and afternoon diastolic blood pressure 89.91 mmHg. The control group pre-test 152.32 mmHg morning systolic blood pressure, morning diastolic blood pressure 81.73 mmHg. The average blood pressure of the elderly in the post-test 144.78 mmHg, afternoon systolic blood pressure and afternoon diastolic blood pressure 85.80 mmHg. The results of bivariate analysis of the intervention group with a p-value of <0.05 and a control group with a p-value of <0.05. There is an effect of giving celery leaf boiled water on lowering blood pressure in the elderly with essential hypertension.

Keywords: blood pressure; diastolic; non-communicable diseases; systolic

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### INTRODUCTION

Non-communicable diseases (NCDs) are one of the chronic diseases that have the highest potential mortality rate of 70% in the world. One of the non-communicable diseases is hypertension, dubbed as The Silent Killer, is a cardiovascular disease that causes the 5th highest death in Indonesia, characterized by a condition in which a person experiences an abnormal increase in blood pressure in the arteries that flow blood to the heart back to the heart in a period (Haryati, et al., 2021). Based on data from The International Society of Hypertension (ITALIC) and the World Health Organization (WHO), there are 1 billion people with hypertension worldwide in developing countries of three million resulting in death every year and middle or moderate average income. Data on the prevalence of hypertension in 2025 is predicted to increase by around 29% of adults worldwide. In Southeast Asia, it ranks 3rd at 25%, of which one-third of the population suffers from hypertension and 1.5 million die

(Khotimah, 2023). According to data from the American Heart Association (2013), it is proven that in the United States as many as 77.9 residents or 1 in 3 people suffer from hypertension. In 2011, WHO data showed two-thirds of the world's population suffering from hypertension was in low- and middle-income developing countries. Indonesia is in 10th place with the highest prevalence of hypertension in the world along with other countries including India, Myanmar, Bhutan, Sri Lanka, Nepal, and Thailand (Yulidar, et al., 2023).

The prevalence in Yogyakarta places 4th in Indonesia as a province with hypertension at 11.1% from the national figure of 34.1%. The data on the highest prevalence of hypertension in Yogyakarta include Kulon Progo (34.70%), Gunung Kidul (39.25%), Bantul, (29.89%), Sleman (32.01%) and Yogyakarta (29.28%) (Murwani, et al., 2023). According to data from the Health Office, Sleman is one of the sub-districts with the most hypertension patients with 6,138 cases and is in the top ten in Kalasan sub-district (Murwani, et al., 2023). In 2019 in the Special Region of Yogyakarta, it was estimated that hypertension patients aged  $\geq 15$  years reached 311,664 cases (Shelviana, 2023). Based on Basic Health Research (Riskesdas) in 2013 and 2018, the prevalence of hypertension in Indonesia has increased. In Riskesdas in 2013, the prevalence of hypertension patients reached 25.8%, while in 2018 the prevalence of hypertension patients reached 34.1%. Based on the prevalence of male sex is 31.3% and female sex is 36.9%. The prevalence group of hypertension patients aged 18-24 years is 13.2%, age 25-34 years is 20.1%, age 35-44 years is 31.6%, age 45-54 is 45.3%, age 55-64 is 55.2%, age 65-74 is 63.2% and age 75 years and over is 69.5% (Shelviana, 2023).

The management of pharmacological treatment by paying attention to the level of compliance with chemical drugs is used to treat hypertension which has side effects including insomnia, peripheral vascular disorders and bronchospasm and the mechanism of action consists of vasodilators, diuretics, betablockers and sympathetic drugs by consuming in the long term can have adverse effects on the body (Waruwu, et al., 2021). The management of pharmacological treatment by paying attention to the level of compliance with chemical drugs is used to treat hypertension which has side effects including insomnia, peripheral vascular disorders and bronchospasm and the mechanism of action consists of vasodilators, diuretics, betablockers and sympathetic drugs by consuming in the long term can have adverse effects on the body (Waruwu, et al., 2021). *Apium graveolens* (celery) has a pinnate shape 3-6 cm long, 2-4 cm wide and contains apigenin that can prevent narrowing of blood vessels and phthalides are used to relax arterial muscles. The substance has a mechanism to regulate blood vessels so that the flow of blood vessels enlarges and reduces the increase in blood pressure. Celery also contains two active compounds that function as a lowering blood pressure and diuretic, apigenin and mannitol are beneficial for increasing the amount of urine frequency (Lazdia, et al., 2020).

Based on Suidah's research (2018), this research was carried out at Posyandu Ngudi Konco, Donomulyo Village, Donomulyo District, Malang Regency for 14 days by providing celery leaf boiled water to the elderly with hypertension. It was found that celery leaf water decoction has the effectiveness of lowering blood pressure in the elderly. Furthermore, research was conducted by Solihati & Kurniawan (2019), every day for 5 days by giving a decoction of celery leaves as much as 200 cc. The results of this study show that celery leaf decoction has a significant effect on lowering blood pressure in hypertensive patients (Waruwu, et al., 2021). The results of the research conducted by Fadriyanti and Suryarinilsih (2021), stated that the respondents' condition was in accordance with the theory that using celery leaves could lower blood pressure and the results of the study obtained the effect of celery leaf decoction on hypertensive patients (Ananda, 2022). The results of the preliminary

study survey were conducted on November 23, 2023 conducted by researchers at the Godean I Health Center, Sleman Regency. The results of interviews conducted with 7 hypertensive patients through participating in chronic disease management program activities obtained that 4 hypertensive patients had insufficient knowledge and 3 hypertensive patients had sufficient knowledge related to the definition of hypertension, causes of hypertension, signs and symptoms of hypertension, complications if not routine control at the nearest health center or health facility and control and treatment control blood pressure. Hypertensive patients said they wanted to know how to properly handle hypertension so that the symptoms would not recur. Therefore, the author is interested in finding out the administration of celery leaf decoction water in lowering blood pressure in the elderly with essential hypertension. knowing the administration of celery leaf decoction water in lowering blood pressure in the elderly with essential hypertension in Sidoluhur village, the working area of Godean I Health Center, Sleman Regency.

**METHOD**

This research was carried out on 06 February –02 March , 2024, carried out in the working area of the Godean I Health Center located in Padukuhan Berjo Raya, Sidohulur village, Godean District, Sleman Regency. Using a quasi-experimental pretest-posttest control group design is a treatment design using 2 groups consisting of an intervention group and a control group. The purposive sampling technique was used to select the sample and 110 respondents met the criteria with the inclusion requirements. The data collection techniques carried out by the researcher using primary data and secondary data are as follows: Primary data taken by intervening in blood pressure measurement in the intervention group and control group for respondents, intervening in the administration of celery leaf decoction water in the intervention group for respondents, conducting education using 2 standard operating procedures for measuring blood pressure and celery leaf decoction in the group the intervention and control group, using the omron 7130 digital sphygmomanometer, stethoscope and observation sheets, then collected data obtained from the results of the observation sheet, namely blood pressure measurement and the implementation of giving celery leaf boiled water for 2 times a day after meals within 20 days. The results obtained are then presented in the form of distribution tables and narratives. Secondary data was obtained from data archives, related agencies and several supporting documents regarding the number of elderly people with essential hypertension. The wilcoxon sign rank test was used to see the effectiveness of celery leaf decoction in lowering blood pressure in the elderly with essential hypertension. The mann whitney u test was used to see the difference in significant blood pressure reduction in the intervention group and the control group.

**RESULTS**

Table 1.  
Frequency Distribution by Age, Gender, Last Education, Occupation, History of Hypertension and Drug Use for the Elderly with Essential Hypertension

Variable	Speakers		Control	
	f	%	f	%
<b>Age</b>				
60-65 years old	40	36,4	40	36,4
66-71 years old	35	31,8	35	31,8
72-78 years old	28	25,5	28	25,5
79-84 years old	4	3,6	4	3,6
85-90 years old	3	2,7	3	2,7
<b>Gender</b>				
Woman	64	58,2	64	58,2

Legal Law	46	41,8	46	41,8
Last Education				
Elementary School	63	57,3	63	57,3
Junior High School	24	21,8	24	21,8
Senior High School	20	18,2	20	18,2
College	3	2,7	3	2,7
Employment				
Housewives	23	20,9	23	20,9
Laborer	57	51,8	57	51,8
Self-employed	13	11,8	13	11,8
Civil Servant Pesion	8	7,3	8	7,3
Domestic Assistant	1	0,9	1	0,9
Farmer	4	3,6	4	3,6
Not Working	4	3,6	4	3,6
History of Hypertension				
1-5 months	62	56,4	62	56,4
6-10 months	46	41,8	46	41,8
1-50 months	2	1,8	2	1,8
1-5 months	62	56,4	62	56,4
6-10 months	46	41,8	46	41,8
Druge Use				
Amplodipin 10mg	8	7,3	8	7,3
Amplodipin 5mg	38	34,5	38	34,5
Ranitidine 500mg	2	1,8	2	1,8
Cardisan 5mg	1	0,9	1	0,9
Chlorphenamine 150mg	1	0,9	1	0,9
Vitamin B Kompleks	3	2,7	3	2,7
Candesartan 8mg	1	0,9	1	0,9
Candesartan 16mg	2	1,8	2	1,8
Glimipiride 2mg	1	0,9	1	0,9
Laxing 2 kapsul	1	0,9	1	0,9
Paracetamol 500mg	3	2,7	3	2,7
Neurobion Vitamin	2	1,8	2	1,8
Amplodipin 16mg	1	0,9	1	0,9
No history	46	41,8	46	41,8

The table above shows that in both the intervention group and the control group, 40% were 60-65 years old, 58.2% were female, 57.3% were respondents with the last elementary education, 51.8% were working as laborers, 56.4% had a history of hypertension for 1-7 months and 41.8% were absent or did not take medication.

Table 2.

Systolic Blood Pressure Before and After Celery Leaf Decoction in the Intervention Group						
Blood pressure	Mean	SD	Min	Max	Normality	<i>p-value</i>
Pre-morning systolic	154,40	16,508	118	212	0,046	
Post afternoon systolic	145,98	13,636	120	223	0,001	
Systolic difference	0,00	10,936	-25	49	0,200	0,000

Based on the table above, systolic blood pressure before treatment was 154.40 mmHg, standard deviation was 16.508, the lowest value was 118 and the high value was 212 mmHg. The post-treatment pressure was 145.98 mmHg, the standard deviation was 13.636, the lowest value was 120 and the highest value was 223 mmHg. The difference in systolic blood pressure *between pre-test* and *post-test* was 0.00, standard deviation was 10.936, the lowest value was -25 and the highest value was 49, the *Wilcoxon test* was carried out in the *pre-test* and *post-test* obtained a *p-value* of 0.000 where  $\rho < \alpha$ , then  $H_0$  was rejected and  $H_1$  was

accepted, meaning that there was an effect of giving celery leaf decoction water on the reduction of diastolic blood pressure in the elderly with hypertension essential.

Table 3.

Diastolic Blood Pressure Before and After Giving Celery Leaf Decoction Water in the Intervention Group

Blood pressure	Mean	SD	Min	Max	Normalitay	<i>p-value</i>
For the morning diastolic	79,86	10,915	46	102	0,081	
Post afternoon diastolic	89,81	11,000	54	102	0,033	
Diastolic difference	0,00	10,567	-23	22	0,200	0,936

Based on the table above, dystomy blood pressure before treatment was 79.86 mmHg, standard deviation 10.915, low value 46 and high value 102 mmHg. The average diastolic after giving celery leaf decoction water was 89.81 mmHg, standard deviation 11,000, lowest value 54 and high 102 mmHg. The average diastolic difference of *pre-test* and *post-test* was 0.00 mmHg, standard deviation was 10.567, the lowest value was -23 and the high value was 22 mmHg. After the *Wilcoxon* test was carried out on the *pre-test* and *post-test* data , a *p-value* of 0.936 where  $\rho < \alpha$ , then  $H_0$  was rejected and  $H_1$  was accepted, meaning that there was an effect of giving celery leaf decoction water on reducing diastolic blood pressure in the elderly with essential hypertension.

Table 4.

Analysis of Changes in Systolic Blood Pressure Table Before and After Giving Celery Leaf Decoction Water in the Intervention Group

Blood pressure	Status of changes in blood pressure			Total
	Decreased	Increased	Same	
Systolic	74 (61,1%)	31 (33,7%)	5 (0%)	110
Diastolic	49 (55,2%)	54 (49,2%)	7 (0%)	110

Based on the table above, it shows that the analysis of changes in systolic blood pressure before and after the administration of celery leaf decoction water is greater (61.1%) than the decrease in diastolic blood pressure (55.2%). The change in systolic blood pressure increase before and after the administration of celery leaf decoction water was lower in proportion to the decrease in diastolic blood pressure (49.2%). The equation of systolic blood pressure and diastolic blood pressure before and after the administration of celery leaf decoction water was (0%).

Table 5.

Blood Pressure Before and After Giving Celery Leaf Decoction Water to the Control Group

Blood pressure	Mean	SD	Min	Max	Normalitay	<i>p-value</i>
Pre morning systolic	152,32	15,336	115	195	0,001	
Post afternoon systolic	144,78	14,290	115	186	0,018	
Systolic difference	0,00	10,395	-28	35	0,200	0,000

Based on the table above, systolic blood pressure before treatment was 152.32 mmHg, standard deviation was 15.336, the lowest value was 115 and the high value was 195 mmHg. The post-treatment pressure was 144.78 mmHg, the standard deviation was 14.290, the lowest value was 115 and the highest value was 186 mmHg. The difference between systolic blood pressure *pre-test* and *post-test* was 0.00, standard deviation was 10.395, the lowest value was -28 and the highest value was 35. After the *Wilcoxon test* was carried out in the *pre-test* and *post-test*, a *p-value* of 0.000 where  $\rho < \alpha$ , then  $H_0$  was rejected and  $H_1$  was accepted, meaning that there was an effect of giving celery leaf decoction water.

Table 6.

Diastolic Blood Pressure Before and After Giving Celery Leaf Decoction Water in the Control Group

Blood pressure	Mean	SD	Min	Max	Normalitay	<i>p-value</i>
Pre morning diastolic	81,73	12,664	43	120	0,001	0,004

Post afternoon diastolic	85,30	6,726	63	110	0,004
Diastolic difference	0,00	6,468	-24	25	0,012

Based on the table above, dystomy blood pressure before treatment was 81.73 mmHg, standard deviation 12.664, low value 43 and high value 120 mmHg. The average diastolic after blood pressure measurements and the administration of celery leaf decoction water was 85.30 mmHg, the standard deviation was 6.726, the lowest value was 63 and the highest value was 110 mmHg. The average diastolic difference between pretest and posttest was 0.00 mmHg, the standard deviation was 6.468, the lowest value was -24 and the high value was 25 mmHg. After the *Wilcoxon* test was carried out on the pretest and posttest data, a *p-value* of 0.004 where  $\rho < \alpha$ , then  $H_0$  was rejected and  $H_1$  was accepted, meaning that there was an effect of celery leaf decoction on the reduction of diastolic blood pressure in the elderly with essential hypertension.

Table 7.  
Analysis of Changes in Systolic Blood Pressure Table Before and After Giving Celery Leaf Decoction Water in the Control Group

Blood pressure	Status of changes in blood pressure			Total
	Decreased	Increased	Same	
Systolic	92 (57,1%)	17 (44,1%)	1 (0%)	110
Diastolic	42(43,9%)	62 (58,4%)	6 (0%)	110

Based on the table above, it shows that the analysis of changes in systolic blood pressure before and after the administration of celery leaf decoction water is greater (57.1%) than the decrease in diastolic blood pressure (43.9%). The change in systolic blood pressure increase before and after the administration of celery leaf decoction was lower in proportion (44.1%) than the decrease in diastolic blood pressure (58.4%). The equation of systolic blood pressure and diastolic blood pressure before and after the administration of celery leaf decoction water was (0%).

Table 8.  
Differences in Systolic Blood Pressure Reduction After Celery Leaf Decoction in the Intervention Group and Control Group

Group	Mean Rank	Sum of Rank	<i>p-value</i>
Intervension	112,45	12370,00	0,649
Control	108,55	11940,00	

Based on the table above, the results of the *Mann-Whitney test*, the comparison of *Mean Rank* on the decrease in systolic blood pressure after being given celery leaf decoction in the intervention group and the control group showed a higher proportion of the intervention group (112.45) than the control group (108.55). Comparison of *Sum of Rank* In the decrease in systolic blood pressure after being given celery leaf decoction water in the intervention group and the control group showed a higher proportion of the intervention group (12370.00) than the control group (11940.00). The results of the *Mann-Whitney test* showed that the variable of blood pressure reduction regarding the administration of celery leaf decoction water was obtained a *p-value* of 0.649 ( $>0.05$ ) where  $\rho < \alpha$ , so  $H_0$  was rejected meaning that there was no difference in blood pressure reduction in the intervention group and the control group.

Table 9.  
Differences in Diastolic Blood Pressure Reduction After Celery Leaf Decoction Water in the Intervention Group and Control Group

Group	Mean rank	Sum of rank	<i>p-value</i>
Intervension	95,15	10356,50	0,000
Control	126,85	13953,50	

Based on the table above, the results of the *Mann-Whitney test*, the comparison of *Mean Rank* on the decrease in diastolic blood pressure after being given celery leaf decoction water in the intervention group and the control group showed a lower proportion of the intervention group (95.15) than the control group (126.85). Comparison of *Sum of Rank* In the decrease in diastolic blood pressure after being given celery leaf decoction in the intervention group and the control group, the proportion of the intervention group was higher (10356.50) than in the control group (13953.50). The results of *the Mann-Whitney test* showed that the variable of blood pressure reduction regarding the administration of celery leaf decoction water was obtained with a *p-value* of 0.000 where  $\rho < \alpha$ , then  $H_0$  was accepted means that there was a difference in blood pressure reduction in the intervention group and the control group.

## DISCUSSION

### Vector Responder

Research conducted by Yulianti et al., (2021) regarding the Effectiveness of Celery Leaf Decoction Against Hypertension Patients in the Elderly, this study used 16 respondents with an average of 50% with the highest response age of 60-70 years and based on gender, it was known that the average was 68.75% with the highest number of respondents, namely 11 women and 5 men (Yulianti et al., 2022). Elderly respondents were chosen, namely the elderly group who experienced many essential hypertension. This is because the elderly body experiences a decrease in both function and structure such as reduced elasticity of atherosclerosis (cholesterol), decreased relaxation of smooth muscles in blood vessels which can reduce cardiac output and increase peripheral stages, resulting in hypertension (Murfat, 2022). The application of hormones exogenously can improve plant temperature tolerance and transcription sequencing is applied thoroughly to explore changes in gene expression to abiotic stress responses, identify transcription factors and study various biological processes (Li, et al., 2022).

Long-term use of antihypertensive drugs leads to drug-related problems. Medication Related Problems are unexpected circumstances that affect the patient, drug therapy can affect the patient's health condition, for example non-compliance, allergy to drugs, drug interactions and if long-term therapy can give side effects that harm several organs of the body so that other alternatives are needed to reduce the level of dependence on drugs and maintain the quality of life of hypertensive patients. In addition, complementary therapies such as herbal therapy are also used to overcome hypertension by using herbal plants such as bay leaves, noni, garlic, star fruit (Suryarinilsih, et al., 2021).

### Pre-Test and Post-Test Data of the Intervention Group and Control Group

Research conducted by Handayani and Wahyuni (2021) on the Effectiveness of Celery Leaves on Reducing Blood Pressure in Hypertensive Patients at the Auxiliary Health Center of Bergam City, Binjai City in 2021. In terms of blood pressure reduction in hypertensive patients, the average blood pressure of the respondents in the pre-test intervention group was 156.00 mmHg for systolic blood pressure and 99.33 mmHg for diastolic pressure. Meanwhile, the average blood pressure of the post-test intervention group respondents was 144.67 mmHg for systolic blood pressure and 90.67 mmHg for diastolic pressure. The average blood pressure of the pre-test control group respondents was 166.33 mmHg for systolic blood pressure and 98.17 mmHg for diastolic pressure. Meanwhile, the average blood pressure of the post-test control group respondents was 146.28 mmHg for systolic blood pressure and 84.50 mmHg for diastolic pressure (Handayani & Wahyuni, 2021).

Based on the pre-test and post-test blood pressure data above, both conducted by the researcher himself and other researchers, namely Handayani and Wahyuni (2021), there was a change in blood pressure in the intervention group given celery leaf boiled water. This means that there is a decrease or change in pre-test and post-test blood pressure values due to the intervention given in the form of celery leaf decoction. The content of celery leaves contains apigenin, potassium, ptalides, asparagine and magnesium which will control blood vessels for relaxation and contraction so that they do not narrow blood vessels, contain sedative compounds in the form of ptalides that function to control blood vessel activity and help the diuretic process (Handayani & Wahyuni, 2021). Apigenin as a beta blocker functions to lower the strength of contractions and slow down the heart rate so that blood flow is pumped less and helps the kidneys excrete excess salt and fluids in the body. Apigenin contained in celery plants dilates blood vessels by means of a mechanism that inhibits contractions caused by the release of calcium (Ulya & Jannah, 2021).

### **The Effect of Giving Celery Leaf Boiled Water in Lowering Blood Pressure**

This is in line with previous research conducted by Waruwu et al., (2021) regarding the Effect of Celery Leaf Decoction Consumption (*Apium graveolens*) on Reducing Blood Pressure in Elderly Patients with Hypertension at the Guna Budi Bakti Foundation Nursing Home in Medan. Where the results showed the effect of consumption of celery leaf decoction (*Apium Graveolens*) on the reduction of blood pressure p-value 0.000 (<0.05) (systolic = 0.000 and diastolic 0.000) (Nursing & Waruwu, 2021). Celery is a low-calorie herbal plant. Celery leaves only have 16 calories per 100 grams, contain insoluble fiber can be combined to reduce weight and cholesterol levels in blood vessels, a rich source of flavonoid antioxidants such as lueti, beta carotene, zea xanthin function as a body protector, cancer prevention and increase immunity. Celery itself is also a good vitamin A and beta carotene that is used to protect the skin, eyes and mucous membranes (Handayani & Wahyuni, 2021). Based on research conducted by a doctor Mark Houston, it is explained that celery is beneficial for lowering blood pressure. Some Chinese medicine experts state that celery is a medicine used for people with hypertension. The content in celery, namely phytochemicals known as pthallides, is able to relax muscle tissue in the artery walls so that blood flow increases (Susanti, 2022).

### **Differences in Blood Pressure Reduction in the Intervention Group and Control Group**

Based on the results of the research test, the mean rank value of the intervention group was lower than that of the control group, so that the results showed that the administration of celery leaf boiled water had a greater effect in lowering systolic and diastolic blood pressure. In the test results, there were respondents who experienced an increase in blood pressure or blood pressure that remained after being interviewed and observed. This is because the diet of some respondents still consumes salty foods, drinks coffee, eats durian, eats longan, eats goat meat, drinks coffee, smoking habits which can be one of the triggering factors for increased blood pressure in the body. Thus, the administration of celery leaf decoction water in the intervention group and the control group both had an effect on lowering blood pressure in the elderly with essential hypertension.

Celery's ability to lower blood pressure because celery contains apigenin, vitamin C, potassium and phytosterols. Celery leaves contain flavonoids that function to prevent the formation of free radicals and have a distinctive aroma derived from phthalide derivatives. Ftalide is a compound known to have antitumor, insecticide and anti-inflammatory properties. Celery seeds contain bioactive compounds, namely linolenic acid, luteolin, oleic acid and psoralen, which have the ability to inhibit cancer cells and apoptosis. In addition, celery seeds contain vitamins A, B and C to help reduce oxidative stress in cells that prevent the

development of cancer cells (Widyawaty, Diana & Fatmawati, 2023). The mechanism in celery plants on blood pressure is to provide a dilating effect in blood vessels and can inhibit angiotensin converting enzymes. This inhibition can decrease the ability of the kidneys to increase blood pressure. In general, blood pressure will gradually drop after intervention and is accompanied by healthy behaviors by reducing salt, getting enough rest, exercising diligently and not smoking. Celery leaf decoction against blood pressure in patients with hypertension, this is because it has nutritional content. In addition, celery leaf decoction therapy is also given directly so that the celery decoction water is absorbed by the body (Susanti, 2022).

## **CONCLUSION**

Based on the results of research on the benefits of giving celery leaf decoction water in lowering blood pressure in the elderly with essential hypertension that has been carried out and described in the discussion exposed in the previous chapter, the researcher can give the following conclusions: The characteristics of the respondents in the intervention group and control group were mostly 60-65 years old, female, elementary education/equivalent, working as laborers and had received information about essential hypertension by health workers at health centers or other health facilities. There was a decrease in blood pressure after the administration of celery leaf decoction water in the intervention group, namely there was an effect of celery leaf decoction on the reduction of systolic and diastolic blood pressure in the elderly with essential hypertension. There was a decrease in blood pressure after the control group, namely there was an effect of giving celery leaf decoction water to the elderly with essential hypertension. There was a decrease in blood pressure in the intervention group and the control group when celery leaf decoction water was given to the elderly with essential hypertension, namely in the systolic difference data there was no difference in blood pressure reduction, but in the diastolic difference data there was a difference in blood pressure reduction in the intervention group and the control group.

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