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# The Influence of Celery Juice Againsts Blood Pressure Reduction in Hypertension

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**Abstract.** The first rank of non communicable diseases in Jepara 2015 was 15,469 cases. The most cases are woman with 11,520 and men with 3,939. In Kalinyamatan health center 2015, there was an increase in hypertension cases from semester 1 until 2. Celery is plant that is easily found in the community, Celery contains apigenin which is very useful for preventing narrowing of blood vessels and high blood pressure. The purpose of this study was to determine the effect of celery juice on blood pressure reduction in hypertension patients. This research used quantitative method with quasy experiment approach. Data collection using random sampling techniques. The respondents of this study were 24 respondents. Data is collected in March - April 2019. Data analysis used non-parametric tests to measure significantly 2 groups of data paired with the T-Test. The results obtained an average decrease in systolic blood pressure of the diastol intervention group 0,000 and the control group 0.424. Moreover, the p-value is 0,000  $< \alpha$  (0,005). With a value of  $r$  systole -, 623 (strong closeness),  $r$  diastole -, 525 (moderate closeness). It can be concluded that there is a significant effect of celery juice on blood pressure reduction in hypertension patients in Jepara 2019.

## 1. Introduction

Hypertension is often called silent killer because it includes deadly without being accompanied by symptoms first as a warning to victims (Sustrani, 2009). According to WHO the normal limit of blood pressure is 120-140 mmHg for systolic and 80-90 mmHg for diastolic. Someone stated suffering from hypertension when his blood pressure  $> 140/90$  mmHg. . High blood pressure is one of the risk factors for stroke, heart attack, heart failure, arterial aneurysm, and is a major cause of chronic heart failure, thus hypertension is a condition where a person experiences an increase in blood pressure above normal which is  $> 140/90$  mmHg [1].

Global Status Report on Non-Communicable Disesases (2010) data from WHO states that 40% of developing economies have hypertension, whereas developed countries only 35%. Africa holds the top position of hypertension sufferers as much as 46%. While the American got 35%. In Southeast Asia, 36% of adults suffer from hypertension. For the Asian region, this disease has killed 1.5 million people each year. For men and women an increase in the number of patients, from 18% to 31% and 16% to 29%. Based on WHO, 50% of hypertension patients are known, only 25% get treatment, and only 12.5% are treated properly (adequalety trated cases). An estimated 80% increase in cases of hypertension, especially in developing countries in 2025 from a number of 639 million cases in 2000, is estimated to



be 1.5 billion cases in 2025. Treatment of hypertension requires high cost. This is a big burden for both family, community, and country [2].

The results of the Household Health Survey (SKRT) in 2009 showed that the average hypertension in Indonesia was quite high, which was 83 per 1000 people. Based on the prevalence analysis conducted by the Center for Research and Development and Health Policy (2008), the results show that 34.9% of Indonesia's population is affected by hypertension. The highest prevalence was found in Riau Islands Province at 45.0%, Papua at 24.7%, Java and Bali at 22.24% and Sumatra at 9.17% [3].

In Central Java province in 2008 there were 865,204 patients with hypertension, in 2009 there were 698,816 patients with hypertension, in 2010 there were 562,117 patients with hypertension, in 2011 there were 634,860 patients with hypertension, and in 2012 there were 544,711 patients with hypertension.

In Jepara 2015 there were 15,469 cases of hypertension which ranked first from non-communicable diseases, where the sufferers were more women at 11,520 while men were 3,939 (DKK Jepara, 2015).

Traditional Chinese society has long used celery to lower blood pressure. Besides celery is easy to find and the price is affordable to the wider community Celery also contains apigenin which is very useful for preventing narrowing of blood vessels and high blood pressure. In addition, celery also contains pthalides and magnesium which are good for helping to relax the muscles around arteries and help normalize narrowing of arteries. Pthalides can reduce stress hormones that can increase blood [4].

Based on the description above, the researchers are interested in conducting research on the effect of celery juice on blood pressure reduction in patients with hypertension in Jepara.

## 2. Method

This type of research Quasy Experiment using the form of pre-test, and post-test control group design is used in this study. According to denim (2004) the design of this study aims to identify the causal relationship by involving two groups of subjects. The subject group was observed before the intervention was carried out, then observed again after the intervention. In this design, the experimental group treated with celery juice, while the control group was given another treatment by giving a low salt diet. The two groups were preceded by a pre-test (initial measurement) of the value of learning outcomes and after the treatment was held.

Primary data were obtained by measuring blood pressure with a digital spagmomanomete. The population in this study were 25 patients with mild hypertension in Bakalan Wetan village.

## 3. Result and discussion

Based on the results of research conducted in Bakalan Village in 2019, it can be described the characteristics of respondents as follows:

This study uses 24 respondents consisting of 12 respondents in the intervention group and 12 control groups. The most respondents in the age range 46-50 years are 14 people (58.3%) and the least in the age range 40-45 years as many as 10 people (41.7%). The most gender of respondents is male, as many as 16 respondents (66.7%) and at least as many as 8 women (33.3%). The most respondents as laborers are 7 people (29.2%) and the least as farmers are 5 people (20.8%). The treatment group respondents with the control group respondents the same number, which is 12 50% each). The most respondents were those who experienced a decrease in systolic blood pressure by 21 people (87.5%) and the least were respondents who experienced an increase / fixed right systolic blood of 3 people (12.5%). The most respondents were those who experienced a decrease in dastolic blood pressure by 20 people (87.3%) and the least were respondents who experienced an increase / permanent diastolic blood pressure of 4 people (12.7%).

The data obtained before treatment in the intervention group average systolic blood pressure 151.83 and average diastolic blood pressure 96.25, whereas in the control group the average systolic blood pressure was 148.33 and the average average diastolic blood pressure 92.83.

**Table 1.** Frequency distribution of respondents based on blood pressure after treatment

Blood Pressure	Mean	Median	Modus	SD	Min	Max
Intervention Group						
After Treatment						
Sistol	134,25	134,50	135	2,417	131	139
Diastol	85,75	86,00	85	0,754	85	87
Control Group						
After treatment						
Sistol	141,92	142,00	142	5,230	133	152
Diastol	88,08	86,50	85	3,175	85	93

Resource: Primary Data, 2016

Based on table 1 shows that the data obtained after treatment in the intervention group average systolic blood pressure 134.25 and average diastolic blood pressure 85.75, while in the control group average systolic blood pressure 141.92 and average average diastolic blood pressure 88.08.

While based on the normality test (Shapiro-Wilk) the results show that the overall data  $\alpha > 0.05$  then the data above are normal. For that the test used is the Paired Sample Test. Paired Sample Test Results Comparison of average administration of celery juice before and after in the control group and the following interventions: after the paired sample test, the difference between celery juice administration in the intervention group 0.000, the difference in celery juice in the control group was 0.424. And p value obtained is  $0,000 < \alpha (0,005)$ . Thus  $H_a$  failed to be rejected and  $H_o$  was rejected, which means there was a significant influence on the administration of celery juice on blood pressure in patients with hypertension in Bakalan Village, Kalinyamatan District, Jepara.

**Table 2.** Analysis of the effect of celery juice on hypertension of systole

Table 24 Analysis of the effect of celery juice on hypertension of systole				
Test			Celery Juice	systole
Kendall's tau_b	Cytol blood pressure in the Intervention- Control Group	Correlation Coefficient	1,000	-,623
		Sig. (2-tailed)		,000
		N	24	24
	Result	Correlation Coefficient	-,623	1,000
		Sig. (2-tailed)	,000	24
		N	24	

Based on table 2 the r (continuity correlation) value of -. 623 is obtained. This, shows that the value of r is in the range 0.60-0.799 (correlation has a strong closeness). Negative sign, indicating there is a negative relationship direction, meaning that every increase in the independent variable (X) is given celery juice (code 1) and not given celery juice (code 2) will be followed by the value of the dependent variable (Y) namely blood pressure. The value of p value, 000 has a Sig value  $< 0.05$  then  $H_0$  is rejected, which means there is a significant relationship / influence between the administration of celery juice with a decrease in systolic blood pressure.

**Table 3.** Analysis of the effect of celery juice o hypertension of diastole

Test	Celery Juice		diastol
Kendall's tau_b	Diastol Blood Pressure of Intervention Group- Control	Correlation Coefficient Sig. (2-tailed)	1,000 -,525 -,000
		N	24 24
	Nilai Akhir	Correlation Coefficient Sig. (2-tailed)	-,525 ,0003
		N	24 24

Based on table 4.9 to find out the relationship and how close the two variables are, the r (continuity correlation) value of - .525 is obtained. This shows that the value of r is in the range of 0.40-0.599 (correlation has moderate closeness). Negative sign, indicating there is a negative relationship direction, meaning that every increase in the independent variable (X) is given celery juice (code 1) and not given celery juice (code 2) will be followed by the value of the dependent variable (Y) namely blood pressure. The value of p value, 000 has a Sig value <0.05 then H0 is rejected, which means there is a significant relationship / influence between the administration of celery juice with a decrease in blood pressure diastole.

The results of this study indicate that respondents who were given celery juice showed a significant decrease in both systolic and diastolic blood pressure on average blood pressure before and after administration of celery juice. While respondents who were not given celery juice, only given a low salt diet did not show significant changes in average blood pressure before and after treatment. [5], [6], [7], [8].

Difference in blood pressure there was a significant difference between the intervention group and the control group (p values: 0,000 and  $\alpha$ : 0.424. The average decrease in blood pressure in the intervention group was greater than in the control group. Based on the results of the study obtained in this study it was seen that administration Celery juice has a significant effect on reducing blood pressure in people with hypertension [9] [10].

Kendall's tau - $\beta$  test results obtained the value of r (continuity correlation) of -, 623 and -, 525. This shows that the value of r is in the range 0.60-0.799 (the correlation has a strong closeness) and the value of r is in the range 0.40 - 0.599 (the correlation has a moderate closeness). The value of p value, 000 has a Sig value <0.05 then H0 is rejected, which means "there is a significant relationship / influence between the administration of celery juice with blood pressure".

#### 4. Conclusion

After conducting research on the effect of celery juice on blood pressure reduction in Bakalan Village, Kalinyamatan District, Jepara in 2019, it can be concluded that there is a significant influence in the intervention group with a significant value of 0,000. This, again strengthened with values r -, 623 and -, 525 which means celery juice has a strong tolerance to systolic blood pressure and moderate closeness to diastolic blood pressure

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