



THE EFFECT OF TREATMENT OF WATERBOLE JUICE ON BLOOD PRESSURE REDUCTION IN HYPERTENSION PATIENTS: LITERATURE REVIEW

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ABSTRACT

Hypertension is generally caused by an unfavorable lifestyle including excessive salt consumption because salt can increase blood pressure quickly in some people, especially for people with severe hypertension, people with mild hypertension, and people with old age. This study aims to explain the effect of giving watermelon juice on reducing blood pressure in patients with hypertension. The writing method used is a literature review related to the effect of giving watermelon juice on reducing blood pressure in patients with hypertension. Journals used as references were obtained by Scholar, and Taylor and Francis. The results showed that there was an effect of giving watermelon juice on reducing blood pressure in patients with hypertension. Watermelon juice can also neutralize blood pressure so that watermelon juice consumers will not experience a continuous decrease in blood pressure. So that people with hypertension can consume regularly with a healthy lifestyle.

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1. Introduction

Hypertension, also known as high blood pressure, is an abnormal increase in blood pressure, including systolic and diastolic blood pressure. Hypertension is a type of sustained high blood pressure in which the systolic blood pressure (when the heart is pumping) is higher than 140 mmHg, while the diastolic blood pressure (when the heart is not moving) is higher than 90 mmHg [1]. People with high blood pressure are usually at risk for other diseases such as stroke and heart disease [2].

Hypertension is generally caused by an unfavorable lifestyle including excessive salt consumption because salt can increase blood pressure quickly in some people, especially for people with severe hypertension, people with mild hypertension, and people with old age [3]. Excess fat content in the blood can cause cholesterol deposits on the walls of blood vessels, this can make blood vessels narrow and consequently blood pressure will increase [4].

Data from the World Health Organization (WHO) in 2018 states that hypertension is still a public health problem and the main cause of death in the world. Worldwide, hypertension is estimated to cause 7.5 million deaths, about 12.8% of all deaths. recorded 57 million years of life adjusted for disability (DALYS) or 3.7% of the total DALYS (Pratama, 2018) The results of basic health research in 2018 stated that the prevalence of hypertension based on measurements in the population aged 18 years was 34.1%, the highest in South Kalimantan (44.1%), while the lowest was in Papua (22.2%). The estimated number of hypertension cases in Indonesia is 63,309,620 people, while the death rate in Indonesia due to hypertension is 427,218 deaths [5].

One of the factors that can affect blood pressure is age and gender. Age can be associated with hypertension because arterial pressure increases with age, the occurrence of aortic regurgitation and the presence of a degenerative process that is more common in the elderly (elderly) [6]. Women have more chances of experiencing hypertension than men, this is due to changes in the hormones estrogen and progesterone that occur in postmenopausal women aged >45 years, affecting the decrease in natural vasodilators of blood vessels [7]. As explained by [8] that hypertension is now lurking in the productive age. This is because people of productive age rarely pay attention to their health, such as unhealthy diet and lifestyle.

The content contained in watermelon turns out to be able to have an influence on blood pressure, because the content in the anti-hypertensive drug there are several that we encounter in watermelon, namely potassium, beta carotene, and potassium [9]. Watermelon is very rich in water, amino acids, L-arginine which can maintain blood pressure, then the amino acid citrulline in watermelon is used by the body to produce the amino acid arginine, which is used by cells lining blood vessels to make nitric oxide, which relaxes vessels. blood so that it can lower blood pressure and prevent heart disease [2].

Potassium functions to relax blood vessels, muscles and regulates sodium balance in cells which plays an important role in triggering hypertension and is utilized by the autonomic nervous system (SSO) which controls heart rate, brain function and other important physiological processes [10]. Potassium reduces systolic and diastolic blood pressure by inhibiting the release of renin, resulting in an increase in sodium and water excretion. This causes a decrease in plasma volume, cardiac output, and peripheral pressure so that blood pressure will fall [7]. Watermelon is very useful for people with hypertension, where there is a high water and potassium content so that it can neutralize blood pressure and nourish the heart. Potassium in watermelon is able to shed toxins to come out with the urine thus helping to promote healthy kidney health [11].

As an anticipatory step to lower blood pressure is to run a healthy diet and healthy lifestyle [12]. A healthy diet by setting a menu for people with hypertension can be done by means of a low-salt diet such as reducing canned or processed foods with a high salt content, a diet low in cholesterol and limited fat, fatty foods of fish types that contain lots of fat such as fish. salmon, meat, offal, nuts and sardines, a high-fiber diet that is recommended for people with hypertension is vegetables and fruits because the fiber and vitamin C content can help lower high blood pressure also serves to help absorb fat and the fiber content helps in process of digestion of food, and low energy diet for those who are overweight, reduce excessive alcohol consumption because there is a linear relationship between alcohol consumption and blood pressure levels and the prevalence of hypertension in the community, and reduce cigarette consumption [4].

In addition to a healthy diet, a healthy lifestyle is also very important because a healthy lifestyle will make us overall healthy [13]. The lifestyle that hypertension sufferers must live is to do light exercise such as walking, swimming, jogging regularly, quitting smoking, also plays a major role in reducing hypertension, controlling cholesterol levels, and losing weight for obese people [14].

2. Method

The study entitled the effect of watermelon juice on reducing blood pressure in patients with hypertension was compiled in the form of a literature review. The protocol and evaluation of this literature review used the PRISMA checklist to determine the selection of studies found and adapted to the purpose of the literature review.

Search literature in this literature review using electronic databases, namely Taylor and Francis and Google Scholar.

Tabel 1. PICOS Format in Literature Review

Criteria	Inclusion	Exklusi
<i>Population/ Problem</i>	Adults and Elderly who have hypertension	Not adults and the elderly have hypertension
<i>Intervention</i>	Watermelon Juice	Watermelon fruit
<i>Comparation</i>	-	-
<i>Outcome</i>	There is an effect of watermelon juice on lowering blood pressure	There is no effect of watermelon juice on
<i>Study design</i>	Quasi-experimental	Bukan quasi-experimental
<i>Publication Years</i>	≥ 2016	≤ 2016
<i>Language</i>	English and Indonesian	Not English and Indonesian



The search strategy in this literature study uses databases including Taylor and Francis and Google Scholar. In the initial search stage, 296 articles were found (Taylor and Francis=34, Scholar=262) after being filtered from 2016-2021. From the journal articles searched at Taylor and Francis, there are many journal articles that are not in accordance with the study area, there are 7 that are in accordance with the study area, a total of 10 articles that can be reviewed.

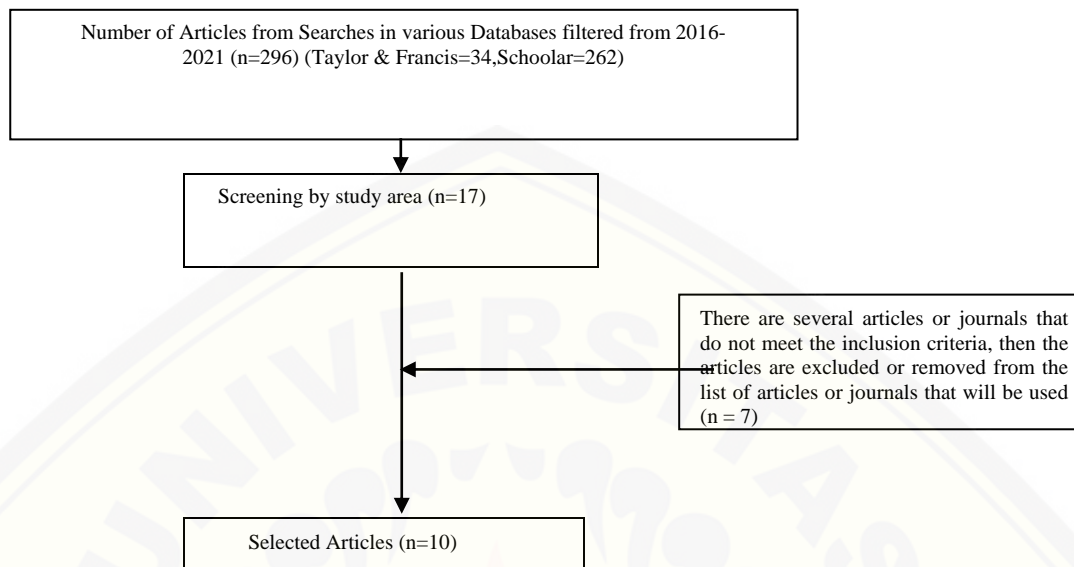


Figure 1. Literature Search Flowchart

3. Result and Analysis

Search articles found a total of 10 that have met the inclusion criteria and study topics. The results of the analysis of all journals using experimental methods with pre-experimental research types totaling 4, true-experimental amounting to 1, and quasi-experimental consisting of one group pre-test post-test design amounting to 2 and two group pre-test post-test design a total of 3, this research on Watermelon Juice was carried out in 2 countries, namely in Africa and Indonesia.

Tabel 2. *Theoretical mapping on Literature Review*

Author	Judul	Design dan Sampel	Intervensi	Hasil
[15]	The Effect of Watermelon Juice on Blood Pressure Reduction in Hypertensive Patients in the Work Area of the Nanggalo Health Center	This type of research was pre-experimental with One Group Pretest – Posttest Design. The sample in this study was hypertension sufferers who suffered from hypertension in the work area of the Sijunjung Health Center, Sijunjung Regency as many as 15 people from the population by adjusting to the inclusion and exclusion criteria, and based on the results of selection in the field during the study, 15 samples were obtained that matched the inclusion criteria and exclusion criteria and could be used as research respondents.	In this study, researchers gave watermelon juice for 7 days in the morning and evening.	Based on the results of statistical tests, it was found that p value = 0.000 (p <0.05), then Ha this study was accepted, meaning that there was an effect of giving watermelon juice on reducing blood pressure of hypertension sufferers in the working area of Sijunjung Health Center, Sijunjung Regency. DOI : https://doi.org/10.36565/jab.v8i1.101

Author	Judul	Design dan Sampel	Intervensi	Hasil
[14]	The Effect of Watermelon Juice on Changes in Blood Pressure in Hypertensive Patients	This study uses a Pre-experimental method with a One Group Pre-Post Test Design approach which is a pre-experimental design by involving one Subject group, the subject group was observed before the intervention, then observed again after the intervention. The population in this study were hypertensive patients in Diwek Village as many as 62 people, the number of samples was 16 people.	Giving watermelon juice therapy in the morning for 7 days starting at 06.00 - 08.00 WIB.	Based on the results of statistical tests, it was found that p value = 0.000 (p <0.05), then Ha this study was accepted, meaning that there was an effect of giving watermelon juice on reducing blood pressure of hypertension sufferers in the working area of Sijunjung Health Center, Sijunjung Regency. DOI : https://doi.org/10.36565/jab.v8i1.101 The results of the Wilcoxon test using SPSS software (statistical product and service solution) obtained a significance value (p) of 0.001 which means that it is below the standard limit value of <0.05 so that H0 is rejected, which means that fennel has a significant effect on changes in blood pressure in sufferers. hypertension after being given watermelon juice in Diwek Village, Jombang. DOI: https://doi.org/2528-3022
[4]	The Effect of Watermelon Juice on Map (Mean Arterial Pressure) in Elderly Patients with Hypertension in the Work Area of the Binjai Estate Health Center	The design of this study used a quasi-experimental one group pre-post test design. 28 people using purposive sampling technique. With the following inclusion criteria: a. Age > 55 years. b. Systolic blood pressure >140 mmHg and diastolic >90 mmHg. Elderly people with hypertension who Willing to be a respondent. d. Not taking hypertension medication.	Intervention stage: 1. On the first day, 28 people were measured blood pressure using a digital blood pressure meter. 2. Respondents sit quietly and relax for 2 minutes. 3. Then given fruit watermelon which is blended and made into juice as much as 250 grams or the equivalent of 150 ml. 4. It is given for 7 consecutive days at noon.	Based on the results of statistical tests using Paired t-test, it shows that there is an effect of watermelon juice on the Mean Arterial Pressure (MAP) on the blood pressure of the elderly with hypertension in the work area of the Binjai Estate Health Center in 2017 with a p value = 0.000 with an average of 119.304 before being given watermelon juice. and after being given health education 103.039. The results of statistical tests showed the value of p = 0.000 means p <0.05, which means that there is an effect of watermelon juice on blood pressure in patients with prehypertension. DOI : https://doi.org/10.37104/ithj.v2i1.27
[16]	The Effect of Giving Watermelon Juice on Blood Pressure Reduction in Elderly Patients with Hypertension in the Work Area of the Lubuk Buaya Padang Health Center in 2017	The type of quantitative research with the design used was Quasi Experiment with the research design used was the Two Group Pretest-Posttest Design. The population in this study were all elderly people with hypertension and a sample of 30 people, consisting of 15 people in the intervention group and 15 people in the control group with Accidental Sampling with the inclusion criteria Blood pressure 160 mmHg and the elderly aged 55-64 years. Data processing through univariate and	Giving watermelon juice to the intervention group for 7 consecutive days. The results showed that the mean systolic and diastolic blood pressure in the pretest in the intervention group was 174.00 / 96.67 mmHg, and the control group was 169.33 / 96.67 mmHg. The mean of systolic and diastolic blood pressure in the posttest intervention group was 156.00/82.00 mmHg, and in the	From the results of statistical tests, it is known that the value of p0.000 (p 0.05) means that there is an effect of giving watermelon juice on reducing children's blood pressure. Elderly people with hypertension in the working area of the Lubuk Buaya Padang Health Center in 2017. DOI : https://doi.org/10.33757/jik.v1i1.32



Author	Judul	Design dan Sampel	Intervensi	Hasil
		bivariate data analysis using Dependent T-Test test.	control group was 167.33/93.33 mmHg.	
[17]	The Effect of Watermelon Juice on Blood Pressure Reduction of Hypertension Patients in the Working Area of Leworeng Health Center	Pre-experiment with one group pre-test post-test design. A sample of 10 people using purposive sampling technique, data collection was done by measuring blood pressure using a sphygmomanometer, and analyzed using the paired t-test.	Watermelon juice was given to the respondents as much as 200 ml/day every morning for 6 days.	The results showed that there was an effect on systolic blood pressure after administration of watermelon juice with a p value of 0.003, while on diastolic blood pressure there was no effect after giving watermelon juice with a p value of 0.667 (p <0.05) so it can be concluded that there was no effect after giving watermelon juice to the respondent's diastolic blood pressure reduction. e-ISSN : 2686-3601
[8]	<i>Effect of Watermelon Juice Consumption On Brachial Blood Pressure Among Sudanese Hypertensive Patients</i>	The research used is quasi-experimental with pre and post test design. Thirty-one patients with stage 1 hypertension (male/female ratio 19:12) who visiting the outpatient clinic Ahmed Gasim was recruited for this study. The age group ranged between 21 and 70 years.	Participants receive one liter of juice freshly prepared watermelon daily for three weeks (L-citrulline/L-arginine: 1g/0.5g per day).	The results showed that watermelon juice supplementation significantly increased plasma levels of L-arginine, L-citrulline and L-ornithine and decreased brachial blood pressure and global arginine bioavailability ratios. In conclusion, we suggest that watermelon juice can be used as a potential natural hypotensive agent even at low doses. Although watermelon juice increases plasma arginine levels, GABR may not be a useful biomarker for assessing the development of hypertension. DOI: https://doi.org/10.1097/01.hjh.0000501177.40776.d6
[7]	The Effect of Giving Watermelon (Citrullus Lanatus) Juice to Changes Blood Pressure in Patients with Hypertension in the Work Area of the Hiang District Health Center Kerinci Year 2019	Quasy Experiment with Two Group Posttest Design. Held in the working area of the Hiang Health Center in April–August 2019. Samples were taken by purposive sampling technique amounted to 16 people.	Watermelon juice is given for 7 (seven) days with the provision of watermelon juice consumed 1 time as much as 250gr per day midday.	The results showed that the average blood pressure of the control group was 147 mmHg systolic and diastolic 95 mmHg, control group post test systolic 131 and diastolic 85 mmHg. While the intervention group pretest systolic 147 mmHg diastolic 95 mmHg and posttest intervention group systolic 123 mmHg diastolic 7 mmHg. The univariate results of the intervention group showed that there was an effect on reducing blood pressure in patients with hypertension. The p-value of systolic 0.022 and diastolic p-value of 0.019 were obtained. e-ISSN : 2655-5840 ISSN : 2655-9641
[2]	The Effect of Watermelon Juice on Changes in Blood Pressure in Hypertensive Patients	The research design used was a quasi-experimental with pre and post test design. Sampling was taken by purposive sampling that met the inclusion and exclusion criteria. The data were tested using the Wilcoxon Signed Rank Test.	Giving watermelon juice for 7 days.	Based on the results of the study, it was found that the p-value of systolic and diastolic blood pressure was 0.000 (<0.005), which means that there was a significant difference between the respondent's initial and final systolic blood pressure average and the respondent's initial and final diastolic blood pressure average. There was a change in the respondent's blood pressure before and after consuming watermelon juice for 7 days. ISSN 2654-6191
[18]	The Effect of Watermelon Juice on Reducing Hypertension in the Elderly	The type of research applied was a quasi-experimental pre-post test research design.	Respondents drank watermelon juice after doing tera exercise and some of them did tera exercise with a	The results of the study using the analysis of the t test (paired sample t-test) with a significant level of 0.05. Based on the calculation results of the SPSS 21 application. The systolic decrease in the experimental group was

Author	Judul	Design dan Sampel	Intervensi	Hasil
	Gymnastics Community in Tandes Village, Tandes District, Surabaya City.		duration of tera exercise of approximately 60 minutes 3 times a week for 6 weeks or 1.5 months.	17.33 mmHg, and the diastolic decrease was 11.00 mmHg and in the control group there was a decrease in systolic of 3.5 mmHg and a decrease in diastolic of 3.3 mmHg. There was a change in the respondent's blood pressure before and after consuming watermelon juice for 7 days, with a p-value of 0.000 (<0.005) which means that H_0 is rejected and H_1 is accepted or there is a significant difference between the respondent's average initial and final systolic blood pressure and the mean of the respondent's initial and final diastolic blood pressure.
ISSN : 2338-8005				
[19]	<i>Giving Watermelon Juice On The Reduction of Blood Pressure of Young Adult Hypertension</i>	This research is an experimental study with a pretest-posttest design with a control group. A sample of 30 people was obtained by using purposive sampling technique and was allocated by Matching as many as 15 people for each treatment group and control group.	Giving watermelon juice for 7 days with a dose of 2 times 350 grams/glass/day.	The results of statistical tests showed that there were differences in systolic and diastolic blood pressure values before and after treatment with watermelon juice for 7 days with a dose of 2 times 350 grams/glass/day in the treatment group with a significant value of $p = 0.000$ ($\alpha = 0.05$). Meanwhile in the control group there was no difference in blood pressure values before and after treatment with a significant value of $p = 1,000$ ($\alpha = 0.05$) for systolic blood pressure and $p =$ 0.499 for diastolic blood pressure. There were differences in changes in blood pressure values after the treatment of watermelon juice administration between the treatment group and the control group with a significant value of $p = 0.031$ ($\alpha = 0.05$) for systolic blood pressure and $p =$ 0.012 for diastolic blood pressure. DOI: https://doi.org/10.36590/jika.v2i3.112

4. Discussion

Hypertension, also known as high blood pressure, is an abnormal increase in blood pressure, including systolic and diastolic blood pressure. Hypertension is a type of sustained high blood pressure in which the systolic blood pressure (when the heart is pumping) is higher than 140 mmHg, while the diastolic blood pressure (when the heart is not moving) is higher than 90 mmHg. People with high blood pressure are usually at risk for other diseases such as stroke and heart disease [2]. Hypertension is generally caused by an unfavorable lifestyle including excessive salt consumption because salt can increase blood pressure quickly in some people, especially for people with severe hypertension, people with mild hypertension, and people with old age. Excess fat content in the blood can cause cholesterol deposits on the walls of blood vessels, this can make blood vessels narrow and consequently blood pressure will increase [4].

One of the factors that can affect blood pressure is age and gender. Age can be associated with hypertension because arterial pressure increases with age, the occurrence of aortic regurgitation and the presence of a degenerative process that is more common in the elderly (elderly). Women have more chances of experiencing hypertension than men, this is due to changes in the hormones estrogen and progesterone that occur in postmenopausal women aged >45 years, affecting the decrease in natural vasodilators of blood vessels [7]. As explained by [8] that hypertension is now lurking in the productive age. This is because people of productive age rarely pay attention to their health, such as unhealthy diet and lifestyle.

The content contained in watermelon is apparently able to have an effect on blood pressure, because the content in the anti-hypertensive drug there are several that we encounter in watermelon, namely potassium, beta carotene, and potassium. Watermelon is very rich in water, amino acids, L-arginine which can maintain blood pressure, then the amino acid citrulline in watermelon is used by the



body to produce the amino acid arginine, which is used by cells lining blood vessels to make nitric oxide, which relaxes vessels. blood so that it can lower blood pressure and prevent heart disease [18].

Potassium functions to relax blood vessels, muscles and regulates sodium balance in cells which plays an important role in triggering hypertension and is utilized by the autonomic nervous system (SSO) which controls heart rate, brain function and other important physiological processes. Potassium reduces systolic and diastolic blood pressure by inhibiting the release of renin, resulting in an increase in sodium and water excretion. This causes a decrease in plasma volume, cardiac output, and peripheral pressure so that blood pressure will fall [7].

Watermelon is very useful for people with hypertension, where there is a high water and potassium content so that it can neutralize blood pressure and nourish the heart. Potassium in watermelon is able to shed toxins to come out with the urine thereby helping to promote healthy kidney health [17]. As an anticipatory step to lower blood pressure is to run a healthy diet and healthy lifestyle. A healthy diet by setting a menu for people with hypertension can be done by means of a low-salt diet such as reducing canned or processed foods with a high salt content, a diet low in cholesterol and limited fat, fatty foods of fish types that contain lots of fat such as fish. salmon, meat, offal, nuts and sardines, a high-fiber diet that is recommended for people with hypertension is vegetables and fruits because the fiber and vitamin C content can help lower high blood pressure also serves to help absorb fat and the fiber content helps in process of digestion of food, and a low-energy diet for those who are overweight, reduce excessive alcohol consumption because there is a linear relationship between alcohol consumption and blood pressure levels and the prevalence of hypertension in the community, and reduce cigarette consumption [16].

In addition to a healthy diet, a healthy lifestyle is also very important because a healthy lifestyle will make us overall healthy. The lifestyle that hypertension sufferers must live is to do light exercise such as walking, swimming, jogging regularly, quitting smoking, also plays a major role in reducing hypertension, controlling cholesterol levels, and losing weight for obese people [2]. The study entitled the effect of giving watermelon juice on reducing blood pressure in patients with hypertension [15] was carried out by providing an intervention in the form of giving watermelon juice for 6 consecutive days with a dose of 200 ml, which was given once a day. The results showed that the average systolic blood pressure before administration of watermelon juice was 147 ± 14.8 mmHg, and after the intervention in the form of watermelon juice for 6 days, the average respondent's blood pressure decreased to 131 ± 13.7 mmHg. After statistical analysis using the paired t-test was carried out, the value of $p = 0.003$ ($p < 0.05$) so that it can be concluded that there was an effect after giving watermelon juice to the respondent's systolic blood pressure with an average decrease of 16 mmHg, while for Diastolic blood pressure before administration of watermelon juice was on average 91 ± 7 mmHg, and after giving the intervention in the form of watermelon juice for 6 days, the average diastolic blood pressure of respondents decreased to 83 ± 6.4 mmHg with an average decrease of 8 mmHg. After statistical analysis using the paired t-test, the p value = 0.667 ($p > 0.05$) so it can be concluded that there is no effect after giving watermelon juice to the respondent's diastolic blood pressure reduction.

Similar to this study [16]. Based on the results of research in the intervention group, it can be concluded that the mean systolic blood pressure before administration of watermelon juice was 174.00 mmHg with a standard deviation of 7.368. After giving watermelon juice for 7 consecutive days, there was a decrease in systolic blood pressure to 156.00 mmHg with a standard deviation of 5.071. The average diastolic blood pressure before giving watermelon juice was 96.67 mmHg with a standard deviation of 9.759. After giving watermelon juice for 7 consecutive days, there was a decrease in diastolic blood pressure to 82.00 with a standard deviation of 4.140. The results of the paired samples test (T-Test test) obtained p value = 0.000 ($p \leq 0.05$), which means that there is an effect of giving watermelon juice on reducing blood pressure in elderly people with hypertension in the Lubuk Buaya Padang Health Center Work Area in 2017.

Based on this, the researcher's analysis of this research is the research that the researcher has done for 7 consecutive days and the results are very significant, which is a decrease in systolic and diastolic blood pressure in elderly patients in the Lubuk Buaya Padang Health Center Work Area. With this decrease in blood pressure, it proves that the content in watermelon can lower blood pressure slowly without side effects that harm people who consume it. In addition to lowering blood pressure, watermelon can also neutralize blood pressure so that watermelon juice consumers will not experience a continuous decrease in blood pressure, so it will be safe to consume without worrying about making blood pressure drop, meaning that blood pressure will remain stable. Regular consumption of watermelon juice can reduce blood pressure, this is evident from the decrease in the blood pressure of respondents who consumed watermelon juice for 7 consecutive days, where in the intervention group

there was a decrease in systolic and diastolic blood pressure every day, while in the control group on day 6 5 there was an increase in systolic blood pressure and on the 3rd and 7th day there was an increase in diastolic blood pressure. This is caused by other factors, such as respondents consuming foods containing fat and coconut milk and can also be caused by stress. The experience that researchers got in the field during the study, the decrease in blood pressure by consuming watermelon juice was more clearly visible on a regular basis if the respondent or the individual avoided fatty foods and coconut milk such as rendang.

Family support is also very helpful for compliance and regularity of drinking watermelon juice to lower the respondent's own blood pressure. By consuming watermelon juice can stimulate urine output because watermelon contains a lot of water so that excess sodium levels in the body can be excreted through urine, while the high potassium content in watermelon can help the heart work and normalize blood pressure and keep blood pressure normal. Based on the results of statistical tests in research [4] using Paired t-test, it shows that there is an

While research from [18] showed that most (70.0%) respondents with moderate hypertension experienced a change to mild hypertension as many as 7 people, still moderate hypertension as many as 3 people and most (66.7%) respondents with severe hypertension experienced changes to hypertension. moderate as many as 4 people, still severe hypertension as much as 2 people. The results of the Wilcoxon test using SPSS software (statistical product and service solution) obtained a significance value (p) of 0.001 which means it is below the standard limit value of <0.05 so that H_0 is rejected, which means that fennel has a significant effect on changes in blood pressure in patients. hypertension after being given watermelon juice in Diwek Village, Jombang

In the study [15], it was found that the mean systole before being given watermelon juice was 174.67 with a standard deviation of 21,336 and a diastole with a mean of 105.33 with a standard deviation of 11,872. while the mean systole after being given watermelon juice was 152.67 with a standard deviation of 17.915 and the average diastole after being given watermelon juice was 85.33 with a standard deviation of 9.904. Based on the results of statistical tests, it was found that p value = 0.000 ($p < 0.05$), then H_a this study was accepted, meaning that there was an effect of giving watermelon juice on reducing blood pressure of hypertension sufferers in the working area of Sijunjung Health Center, Sijunjung Regency.

In the study [20] the average initial systolic blood pressure of respondents before being given treatment was 151.5 mmHg with a standard deviation of 6.708. The highest initial systolic blood pressure was 160 mmHg and the lowest was 140 mmHg. The mean initial diastolic blood pressure was 99 mmHg with a standard deviation of 5.525. The highest diastolic blood pressure was 100 mmHg and the lowest was 90 mmHg. After 7 days of treatment, there was a decrease in the respondent's systolic and diastolic blood pressure, with the final systolic average being 130 mmHg with a standard deviation of 7,255. The highest end systolic blood pressure was 140 mmHg and the lowest was 120 mmHg. The mean end-diastolic blood pressure was 82 mmHg with a standard deviation of 7.678. The highest end-diastolic blood pressure was 90 mmHg and the lowest was 70 mmHg.

In the study [19] also showed that the average decrease in diastolic blood pressure in the treatment group was 12 mmHg with a minimum value of 10 mmHg, a maximum of 20 mmHg and a standard deviation of 1.447. Whereas in the control group, the average decrease in diastolic blood pressure that occurred was only 1.33 mmHg for an average with a minimum value of -10 mmHg which means that there was an increase in the diastolic blood pressure of subjects in the control group and a maximum value of 10 mmHg by standard deviation 1.919. The results of the free sample t test for the decrease in diastolic blood pressure between the treatment group and the control group showed a significant value of $p = 0.012$. The value of $p = 0.012 < 0.05$ indicates that there is a difference in the decrease in diastolic blood pressure between the treatment group and the control group before and after treatment so it can be concluded that the administration of watermelon juice (*Citrullus vulgaris* Schard) has an effect on decreasing the diastolic blood pressure of subjects in the treatment group. In this study, a 24-hour recall was also carried out for 7 consecutive days in the treatment group and the control group to see a picture of the effect of food intake on blood pressure in patients with hypertension. Based on the results of the recall, it was found that the consumption pattern of hypertensive patients was taboo on certain foods that were considered to increase their blood pressure, such as foods that contain a lot of sodium and fat.

5. Conclusion

Research shows that there is an effect after giving watermelon juice on blood pressure in hypertensive patients. In addition to lowering blood pressure, watermelon can also neutralize blood pressure so that watermelon juice consumers will not experience a continuous decrease in blood pressure, so it will be safe to consume without worrying about making blood pressure drop, meaning that blood pressure will



remain stable. So that the results of research related to the effect of giving watermelon juice on reducing blood pressure in hypertensive patients can be applied as a way to lower blood pressure.

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