

## Effectiveness of Giving a Combination of Carrot Honey and Chayote Juice in Reducing Blood Pressure in Hypertension Sufferers

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### Abstract

**Background:** Hypertension is a condition where a person experiences an increase in blood pressure above normal. Blood pressure is usually described as the ratio of systolic pressure to diastolic pressure, with normal values for systolic pressure of 110 to 130 mmHg and diastolic pressure of 80 to 90 mmHg.

**Objectives:** To determine the effectiveness of giving a combination of carrot honey and chayote juice to reduce blood pressure in hypertension sufferers in the RT area. 04 & 05 RW. 012 Pancoran Mas Village, Depok City.

**Methods:** This research uses quantitative research. This type of research is a Quasi-Experimental Design with a Two Group Pre-test and Post-test Without a Control Group Design approach involving 30 pre-elderly and elderly people who have high blood pressure. The data collection tool was carried out offline using the interview method. The research instruments used were a sphygmomanometer and a stethoscope. Analysis of the collected data used the Wilcoxon test.

**Results:** The results of the Wilcoxon test on the pre-test and post-test show the interpreted value of the Wilcoxon test if  $Asymp.Sig < 0.05$ . So it can be concluded that  $H_a$  is accepted and  $H_0$  is rejected

**Conclusion:** There is a difference in the effectiveness of giving a combination of carrot honey and chayote juice to reduce blood pressure in hypertension sufferers in the RT area. 04 & 05 RW. 012 Pancoran Mas Village, Depok City in 2022. It is hoped that the combination therapy of honey carrot juice and chayote juice can be used as a complementary therapy to help lower blood pressure in hypertension sufferers.

**Keywords:** chayote, honey carrot juice combination, hypertension

### Introduction

Hypertension or high blood pressure is often referred to as the silent killer because generally sufferers are unaware of it and do not feel the symptoms. In addition, if blood pressure is not controlled properly, there is a risk of death for the sufferer. Hypertension is a major health problem in Indonesia and in several countries in the world. One of the health problems that occurs in the elderly is the tendency to have increased blood pressure.<sup>1</sup> Factors that trigger hypertension include obesity, consuming excess salt, and consuming too many drinks containing caffeine over the age of 65 years.<sup>2</sup>

The prevalence of hypertension according to data from the World Health Organization

(WHO) in 2019 estimates that 1.13 billion people worldwide suffer from hypertension. African countries have the highest prevalence of hypertension cases, namely 27%, while Southeast Asian countries are in the 3rd position with the highest number of hypertension cases at 25% of the total population. This number will increase every year and by 2025 it is estimated that it will reach 1.5 billion cases of hypertension worldwide.<sup>3</sup> According to Riskesdas in 2018, the prevalence of non-communicable diseases (PTM) hypertension increased from 25.8% to 34.1%. Hypertension sufferers aged 18-24 years reached 13.3%, aged 25-34 years reached 20.1%, and aged 35-44 years reached 31.6%.<sup>4</sup> The prevalence of hypertension sufferers in West Java in 2017 was 33%, but in 2018 it increased to 34.5%. So the prevalence of hypertension sufferers is 84.29%. This increase is related to unhealthy lifestyles, including consuming alcoholic drinks, smoking, and lack of physical activity.<sup>5</sup>

Hypertension that is not treated properly can cause blood vessels to burst, which can cause brain damage, coronary heart disease, stroke, kidneys, and eyes.<sup>2</sup> To prevent complications and stabilize blood pressure, management is needed. Management of hypertension can be provided with therapy. This therapy is divided into 2 types, namely pharmacological therapy or with drugs and non-pharmacological therapy. Pharmacological therapy used for hypertension includes diuretic drugs, hydrochlorothiazide (HCT), ACE inhibitors, calcium channel blockers, and beta receptor blockers.<sup>6</sup> non-pharmacological therapy is therapy without using drugs in the therapy process. Because the use of hypertension medication can cause several side effects, traditional medicine or herbal medicine can be an option. The herbal or traditional treatment for high blood pressure that is needed is fruit, vegetables, leaves, and roots which contain potassium, calcium, and other important substances.<sup>7</sup>

Based on the background above, this research was conducted to determine the effectiveness of giving a combination of carrot honey and chayote juice to reduce blood pressure in hypertension sufferers in the RT area. 04 & 05 RW. 012 Pancoran Mas Village, Depok City.

## Method

This research uses quantitative research. This type of research Quasisy Experimental Design with a Two Group Pre-test and Post-test with a Control Group Design approach, namely, to reveal cause and effect relationships by involving two groups of subjects. Subject groups were observed before administration intervention, and then observed again after the intervention was given. In this research, the researcher chose a sampling technique using the Total Sampling method. Involving 30 pre-elderly and elderly people who have high blood pressure. The data collection tool was carried out offline using the interview method. The research instruments used were a sphygmomanometer and a stethoscope. Analysis of the collected data used the Wilcoxon test.

## Results

**Table 1.** Characteristics of respondents based on gender and age in the honey carrot juice combination intervention group

The intervention group combined honey carrot juice	N	%
Gender		
Man	2	13.3
Woman	13	86.7
Age		
45 – 59 years (Pre-elderly)	4	26.7
>60 years (elderly)	11	73.3

<b>Chayote juice intervention group</b>		
Gender		
Man	3	20.0
Woman	12	80.0
Age		
45 – 59 years (Pre-elderly)	6	40.0
>60 years (elderly)	9	60.0

Based on [table 1](#) above, the characteristics of respondents based on gender were mostly women with 13 respondents (86.7%) out of a total of 15 respondents in the honey carrot juice intervention group. Apart from that, the table above shows the characteristics of respondents based on age who suffer from hypertension the most, namely in the age group >60 years (elderly) with 11 respondents (73.3%). Based on gender, the majority were women with 12 respondents (80.0%) out of 15 respondents in the chayote juice intervention group. Apart from that, the table above shows the characteristics of respondents based on age who suffer from hypertension the most, namely in the age group >60 years (elderly) with 9 respondents (60.0%).

**Table 2.** Average blood pressure before and after being given the honey-carrot juice combination intervention

Blood pressure	Mean Pre-test	Mean Post-test
Systolic	155.20	148.07
Diastolic	98.73	91.07

Based on [table 2](#), the average blood pressure before being given the honey-carrot juice combination intervention showed systolic 156.20 mmHg and diastolic 98.73 mmHg. Meanwhile, the average blood pressure after being given the combination intervention of honey carrot juice was 148.07 mmHg systolic and 91.07 mmHg diastolic.

**Table 3.** Average blood pressure before and after the chayote juice intervention

Blood pressure	Mean Pre-test	Mean Post-test
Systolic	158.40	147.40
Diastolic	95.60	87.07

Based on [table 3](#), the average blood pressure before the chayote juice intervention was given showed systolic 158.40 mmHg and diastolic 95.60 mmHg. Meanwhile, the average blood pressure after administration was 147.40 mmHg systolic and 87.07 mmHg diastolic.

**Table 4.** Effectiveness of giving a combination of honey carrot and chayote juice to reduce blood pressure in hypertension sufferers in the RT area. 04 & 05 RW. 012 Pancoran Mas Subdistrict, Depok City in 2022

Treatment Variables	Treatment Variables	N	Z	P-value
Systolic BP of honey carrot juice combination therapy. Pre-test and post-test systolic blood pressure of honey carrot juice combination therapy	Systolic BP of honey carrot juice combination therapy. Pre-test and post-test systolic blood pressure of honey carrot juice combination therapy	15	-3.439	0.001
Diastolic BP with combination therapy with honey carrot juice. Pre-test and post-test diastolic with combination therapy with honey carrot juice	Diastolic BP with combination therapy with honey carrot juice. Pre-test and post-test diastolic with combination therapy with honey carrot juice	15	-3.436	0.001
Systolic BP of chayote juice therapy Pre-test and post-test systolic chayote juice therapy	Systolic BP of chayote juice therapy Pre-test and post-test systolic chayote juice therapy	15	-3.431	0.001

Diastolic BP of chayote juice therapy. Pre-test and post-test diastolic chayote juice therapy	Diastolic BP of chayote juice therapy. Pre-test and post-test diastolic chayote juice therapy	15	-3.415	0.001
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Based on table 4 above, the z-calculated value for systolic blood pressure in the intervention group with a combination of honey carrot juice was -3.439 with a p-value of 0.001 < p-value 0.05, and for the diastolic z-calculated value in the intervention group with a combination of honey-carrot juice -3.436 with p-value of 0.001 < p-value 0.05. The systolic z-count value for the chayote juice intervention group was -3.431 with a p-value of 0.001 < p-value 0.05, and the diastolic z-count value for the chayote juice intervention group was -3.415 with a p-value of 0.001 < p-value 0.05. Interpretation results from the Wilcoxon test of Asymp.Sig < 0.05 then the hypothesis can be accepted. So it can be concluded that Ha is accepted and H0 is rejected, meaning that there is a difference in the effectiveness of giving a combination of carrot honey and chayote juice to reduce blood pressure in hypertension sufferers in the RT area. 04 & 05 RW. 012 Pancoran Mas Subdistrict, Depok City in 2022.

## Discussion

Based on the results of research in the honey-carrot juice combination intervention group, it was found that the characteristics of respondents based on gender were mostly women with 13 respondents (86.7%) out of a total of 15 respondents. In addition, research results showed that the characteristics of respondents based on age suffered from hypertension the most, namely in the age group >60 years (elderly) with 11 respondents (73.3%).

This is in line with research conducted by Tela (2017), the majority of women suffering from hypertension were 28 respondents (81.8%).<sup>8</sup> According to Mulyani (2013), women are more susceptible to hypertension than men. This is due to a decrease in the hormone estrogen in the body. This decrease in estrogen hormone levels can result in reduced production of nitric oxide, resulting in changes in vasoconstriction and narrowing of blood vessels which can cause blood pressure to increase.<sup>8</sup> This is in line with research conducted by Hariati (2021), which found that the majority aged >60 years (elderly) suffered from hypertension. Therefore, increasing age causes a buildup of collagen in the muscles. Thus, stiffness occurs in the blood vessels. This situation causes the arteries to not be able to expand when the heart flows and pumps blood into the arteries, causing the blood volume to flow slightly unevenly.<sup>9</sup>

Based on the results of research in the chayote juice intervention group, it was found that the characteristics of the respondents based on gender were mostly women with 12 respondents (80.0%) out of 15 respondents. Apart from that, research results showed that the characteristics of respondents based on age were the largest, namely in the age group >60 years (elderly) with 9 respondents (60.0%).

This is in line with Majid (2019), who said that on average women will experience an increased risk of high blood pressure or hypertension after being in the 7th phase of menopause. This is in line with research conducted by Sijaga (2021) which found that the majority were aged >60 years (elderly) as many as 16 respondents (88.9%). Maryam (2019) said that after the age of 55 years, the artery walls will thicken. This is caused by a buildup of collagen in the motor layer so that the blood vessels become stiff and gradually narrow.<sup>10</sup>

It was found that the average blood pressure before the honey carrot juice combination intervention was given showed systolic 156.20 mmHg and diastolic 98.73 mmHg. Meanwhile, the average blood pressure after being given the combination intervention of honey carrot juice was 148.07 mmHg systolic and 91.07 mmHg diastolic. This is in line with research conducted by Hariati (2021) entitled Reducing Blood Pressure Through Consuming Wordu (Honey Carrot) Juice in hypertension sufferers. It was found that the average blood pressure of

respondents before being given the intervention was 165.18 mmHg systolic and 156.64 mmHg diastolic. Meanwhile, the average blood pressure of respondents after being given the intervention was 156.64 mmHg systolic and 105.96 mmHg diastolic.<sup>11</sup>

Apart from that, the average blood pressure before the chayote juice intervention was given showed systolic 158.40 mmHg and diastolic 95.60 mmHg. Meanwhile, the average blood pressure after administration was 147.40 mmHg systolic and 87.07 mmHg diastolic. This is in line with research conducted by Nona (2019), which found that the average blood pressure before being given chayote juice therapy with honey was systolic 156.36 mmHg and diastolic 91.79 mmHg. Meanwhile, the average blood pressure after being given chayote juice therapy with honey was 135.26 mmHg systolic and 80.21 mmHg diastolic.<sup>7</sup>

Based on the Wilcoxon test results, it was found that the z-calculated value for systolic blood pressure in the intervention group with a combination of honey carrot juice was -3.439 with a p-value of  $0.001 < p\text{-value} < 0.05$ , and for the diastolic z-calculated value in the intervention group with a combination of honey-carrot juice -3.436 with a p-value of  $0.001 < p\text{-value} < 0.05$ . The systolic z-value of the chayote juice intervention group was -3.431 with a p-value of  $0.001 < p\text{-value} < 0.05$ , and the diastolic z-count value of the chayote juice intervention group was -3.415 with a p-value of  $0.001 < p\text{-value} < 0.05$ . Interpretation results from the Wilcoxon test of  $\text{Asymp.Sig} < 0.05$  then the hypothesis can be accepted. So it can be concluded that  $H_a$  is accepted and  $H_0$  is rejected, meaning that there is a difference in the effectiveness of giving a combination of carrot honey and chayote juice to reduce blood pressure in hypertension sufferers in the RT area. 04 & 05 RW. 012 Pancoran Mas Subdistrict, Depok City in 2022.

The results of the same research conducted by Wijaya (2018) showed that the results of the Wilcoxon test obtained a value of  $p\text{-value} < 0.05$ , which means there was a significant change between the pre and post-averages after being given a combination of juice (carrot and honey) with a systole z-count value of -5.011 and a diastole z-count value of -5.353. It can be concluded that there is an influence on blood pressure in elderly people who suffer from hypertension in the Wredha Shandi Kencana elderly group, Mas Ubud Village.<sup>12</sup>

Apart from that, there are results of the same research conducted by Istiroha (2022) showing that the results of the Wilcoxon test were  $p\text{-value} < 0.05$ , which means there was a significant effect before and after being given fruit juice and celery therapy on reducing pressure. blood in hypertensive sufferers.<sup>13</sup> Hariati said that hypertension or high blood pressure is a condition where a person experiences an increase in blood pressure above normal.<sup>14</sup> If hypertension is not detected early, there will be many sufferers with uncontrolled blood pressure and the number of hypertensive sufferers will continue to increase.<sup>15</sup> To prevent complications and stabilize blood pressure, management is needed. This management is divided into 2 types, namely pharmacological management or with drugs and non-pharmacological management. Management of hypertension can be done non-pharmacologically, namely by consuming a combination of honey-carrot juice.<sup>6</sup> This combination can help control blood pressure in hypertension sufferers. One of the substances contained in carrots is potassium. The potassium contained in carrots has the benefit of lowering blood pressure by helping eliminate water and salt in the body, thereby reducing blood pressure.<sup>16</sup> Potassium has properties as a strong diuretic, so it helps maintain balanced blood pressure.<sup>17</sup>

Meanwhile, honey is a substance that contains large amounts of flavonoids and phenols, so it has anti-oxidant effects, preventing atherosclerosis and protecting capillaries.<sup>18</sup> Not only that, honey also has colagemic effects such as acetylcholine which functions to reduce and

improve blood circulation pressure. Management of hypertension can be done in other non-pharmacological ways, namely by consuming chayote juice. Chayote can also help lower blood pressure because chayote contains potassium. Potassium is a mineral that is good for helping or controlling blood pressure, helping the kidneys to remove salt and excess fluid from the blood, thereby reducing the need for fluid which can help lower blood pressure.<sup>19</sup>

### Conclusion

There is an effectiveness of giving a combination of honey carrot juice and chayote juice in reducing blood pressure in hypertension sufferers in the RT area. 04 & 05 RW. 012 Pancoran Mas Subdistrict, Depok City in 2022.

### Conflict of interest

There is no conflict of interest in this research.

### Thank-you note

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