

## Effectiveness of Combination Therapy of Bay Leaf Decoction and Honey on Blood Pressure in Hypertension Sufferers

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### Abstract

**Background:** Hypertension is a condition where systolic and diastolic pressures increase beyond normal pressure limits, systolic pressures above 140 mmHg and diastolic pressures above 90 mmHg, are health problems that are quite dangerous throughout the world because hypertension is the main risk factor that leads to disease. cardiovascular diseases such as heart attack, heart failure,

**Objectives:** To determine the effectiveness of combination therapy of boiled bay leaves and honey on blood pressure in hypertension sufferers at Posbindu Buncis in the working area of Kemiri Muka Health Center, Depok City

**Methods:** This research uses a quantitative type of research. This type of research is a quasi-experimental method (Quasy Experiment) using a pretest-posttest design. The sample consisted of 40 people. The control group consisted of 20 people and the intervention group consisted of 20 people. The analysis uses the Independent T-test.

**Results:** Independent test shows that the average systolic blood pressure value in the intervention and control groups has a p-value of  $0.781 < 0.05$ , so these results can be concluded that  $H_0$  is accepted, for the average diastolic blood pressure in the intervention and control groups the p-value -value  $0.304 < 0.05$ , it can be concluded that in the intervention and control groups,  $H_0$  was accepted and  $H_a$  was rejected

**Conclusion:** There is no effectiveness of the combination therapy of boiled bay leaves and honey on blood pressure in hypertension sufferers in Posbindu Beans in the working area of the Kemiri Muka Community Health Center, Depok City in 2022.

**Keywords:** bay leaves, honey, hypertension

### Introduction

According to the World Health Organization (2018), hypertension is a dangerous health problem phenomenon throughout the world, because hypertension is the main risk factor that leads to cardiovascular diseases such as heart attacks, heart failure, stroke, and kidney disease, often referred to as the "silent killer" because occurs without signs and symptoms, so sufferers do not know that they have hypertension. The results of the study revealed that as many as 76.1% did not know that they had hypertension.<sup>1</sup>

According to the World Health Organization (2021), it is estimated that 1.28 billion adults aged 30-79 years worldwide suffer from hypertension, the majority (two-thirds) live in low and middle-income countries.<sup>2</sup> Basic Health Research (2018) shows the number of hypertension in Indonesia based on blood pressure checks carried out with residents over the age of 18 years, up to 658,201 people were diagnosed with hypertension with the highest incidence in South Kalimantan Province, namely 44.13%,<sup>3</sup> in West Java Province, the hypertension rate is 34.1%, which is related to lifestyle habits, drinking alcohol and physical activity.<sup>4</sup>

Treatment must be carried out to prevent complications and even death. Complementary-alternative treatment is a non-conventional treatment aimed at improving the level of public health, including promotive, preventive, curative, and rehabilitative efforts. One of the alternative treatments used to lower blood pressure in hypertension sufferers is therapy combination of boiled bay leaves and honey.<sup>5</sup>

Bay leaves contain flavonoid compounds which contain quercetin which has effects as a vasodilator, antiplatelet, and antiproliferative as well as lowering blood pressure, the mineral content in bay leaves makes blood circulation smoother and reduces high blood pressure, bay leaves also contain essential oils eugenol and metal chavicol, as well as ethanol which plays an active role as an antifungal and bacterial agent.<sup>6</sup> Bay leaf decoction combined with honey, honey has many benefits including antioxidants, antimicrobials, increasing the immune system response, honey has a chemical component that has a college-mic effect, namely acetylcholine. Acetylcholine functions to improve blood circulation and lower blood pressure. Apart from that, honey has an antioxidant effect because it contains phenol and flavonoids which function as protectors against capillary problems and atherosclerosis.<sup>5</sup>

Giving bay leaf decoction therapy after 7 days of treatment with bay leaf decoction 2 times/day in the morning and evening up to 200ml, the average systolic blood pressure (146.5 mmHg), with a decrease in the average systolic blood pressure (3.6 mmHg) and average diastolic blood pressure (78 mmHg), with an average decrease of 5 mmHg, 7 based on research results, systolic blood pressure before intervention was 160 mmHg and diastolic 100 mmHg, this was observed after drinking boiled water of 2 bay leaves 100 ml for 7 days, there is a decrease in blood pressure.<sup>7</sup>

Based on this background, this research was carried out to find out the effectiveness of the combination therapy of boiled bay leaves and honey on blood pressure in hypertension sufferers at Posbindu Buncis in the working area of the Kemiri Muka Community Health Center, Depok City.

## **Method**

This research uses a quantitative type of research. This type of research is a quasi-experimental method (Quasy Experiment) using a pretest-posttest design, this design is almost the same as the pre-test and post-test control group design, only in this design the experimental group and control group are compared. However, the sample was taken not randomly. The two groups were given a pre-test, then treated, and finally given a post-test. The sample consisted of 40 people. The control group consisted of 20 people and the intervention group consisted of 20 people. The analysis uses the Wilcoxon statistical test.

## Results

**Table 1.** Characteristics of respondents who experience hypertension at Posbindu Buncis, Kemiri Muka Health Center Working Area, Depok City, 2022

Variable	N	Percentage
<b>Age</b>		
45-59 Years	34	85.0 %
>60 Years	6	15.0 %
Total	40	100.0%
<b>Gender</b>		
Man	5	12.5%
Woman	35	87.5%
Total	40	100.0%

Based on table 1 above, this research shows that the majority of respondents are 45-59 years old, totaling 34 people (85.0%) and the majority of respondents' gender is female, totaling 35 people (87.5%).

**Table 2.** Average systolic and diastolic blood pressure of the control group after administering antihypertensive drugs

Group	Blood pressure	Mean (mmHg)	SD	MIN	MAX
<i>Post</i>					
Control	Systole	147.60	10.753	130	160
	Diastole	90.75	7.786	80	103

Based on table 2, shows that systolic blood pressure is 147.70 mmHg with a standard deviation value of 10.753 with a minimum value of 130 and a maximum value of 160, while diastolic blood pressure shows 90.75 mmHg with a standard deviation value of 7.786 with a minimum value of 80 and a maximum value of 103.

**Table 3.** Average blood pressure in the intervention group after administration of Beans in Posbindu in the working area of Kemiri Muka Health Center, Depok City, 2022

Group	Blood pressure	Mean (mmHg)	SD	MIN	MAX
<i>Post</i>					
Intervention	Systole	146,60	11,816	100	172
	Diastole	91,35	4,146	85	130

Based on table 3, shows that systolic blood pressure is 146.60 mmHg with a standard deviation value of 11.816 with a minimum value of 100, and a maximum value of 172, while diastolic blood pressure is 91.35 mmHg with a standard deviation value of 4.146 with a minimum value of 85 and a maximum value of 130.

**Table 4.** Comparative Analysis of Average Blood Pressure Values for Intervention and Control Groups in Hypertension Patients at Posbindu Buncis Kemiri Muka Community Health Center, Depok City, 2022

Pressure blood group	Pressure blood group	Mean	SD	SE	P-value	N
Interventional Systole	Interventional Systole	146,60	11,816	3,572	0,781	-1,000
	Control Systole	147,60	10,753			
Interventional Diastole	Interventional Diastole	91,36	4.146	1,972	0,304	0,600
	Control Diastole	90,75	7,786			

Based on table of the independent test results above, it is known that the average value of systolic blood pressure in the intervention group was 146.60 mmHg with a standard

deviation value of 11.816, and the systolic blood pressure of the control group was 91.36 mmHg with a standard deviation value of 10.753 and a p-value. value  $0.781 < 0.05$ , then these results can be concluded that the systolic blood pressure in the intervention and control, namely,  $H_0$  was accepted, and  $H_a$  was rejected, which means there is no difference in the average systolic blood pressure, for the average diastolic blood pressure in the intervention group was 91.36 mmHg with the standard deviation of 4,146, and the mean diastolic blood pressure in the control group was 90.75 mmHg with a standard deviation of 7.786 and a p-value of  $0.304 < 0.05$ , so it can be concluded that in the intervention and control groups,  $H_0$  was accepted and  $H_a$  was rejected, which means that there is no effectiveness of combination therapy. Boiled bay leaves and honey on blood pressure in hypertension sufferers in Posbindu Beans in the working area of the Kemiri Muka Public Health Center, Depok City, 2022

## Discussion

Based on the characteristics of the respondents, it was found that the majority of respondents aged 45-59 years were 34 people (85.0%) in the Posbindu Buncis working area of the Kemirimuka health center, Depok city, Cityline with research conducted in Syaifurrahman Hidayat (2018) which showed that the age group in the treatment group was mostly at age 50-59 there were 13 people (43.30%), at age 70-79 there were 9 people (30.0%) and a small portion in the age range 60-69 were 8 people (26.70%).<sup>8</sup>

Based on the research results of Arifal Aris (2018), show that the majority of the treatment group who suffered from hypertension were aged (51-60) years (53.15), because increasing blood pressure with age is very natural, this is due to natural changes in the heart, Blood vessels and hormone levels at old age are more susceptible to hypertension, because at that age the arteries are harder and less flexible to the blood, which can result in an increase in systolic blood pressure. This is also due to the many physiological declines in the body's systems with increasing age because in old age the blood vessels begin to lose their elasticity, which can affect the work of the cardiovascular system and can lead to hypertension, so in old age you are more susceptible to hypertension.<sup>9</sup>

The researcher assumes that the high rate of hypertension among respondents at Posbindu Buncis, the working area of Puskesmas Kemiri Muka, Depok City, 2022, age range 45-59 years and >60 years old is due to frequent consumption of foods high in salt such as junk food, fried food, and salted fish, difficulty taking medication. lack of physical activity.

Based on the description of the characteristics of the respondents, it was found that the majority of respondents were female, 35 people (84.5%) in Posbindu Buncis, the working area of the Kemiri Muka Community Health Center, Depok City, in line with research conducted by Arifal Aris (2018) showing that the majority of respondents were female, 26 people (81, 3%).<sup>9</sup> The results of this study are in line with research by Muhammad Yunus et.al (2021), the majority of respondents were 160 women 59.7%, women's blood pressure, especially systolic, increased more sharply according to age, after 55 years, women had a higher risk of suffering from hypertension, production The hormone estrogen decreases during menopause, so blood pressure increases.<sup>10</sup>

The researcher assumes that women who have not experienced menopause are protected from cardiovascular disease because they are protected by the hormone estrogen which plays a role in increasing high-density lipoprotein (HDL) levels. High HDL levels are a protective factor in the process of atherosclerosis. menopause.

Based on the results in the control group research, show that systolic blood pressure is 147.70 mmHg with a standard deviation value of 10.753 a minimum value of 130, and a maximum value of 160, while diastolic blood pressure shows 90.75 mmHg with a standard

deviation value of 7.786 with a minimum value of 80 and a maximum value 103.

In-line with research conducted by Elsi Setiandri et. al., (2018) shows that the average systolic blood pressure of the control group was 149.27 mmHg and the average diastolic blood pressure of the control group was 98.18 mmHg.<sup>11</sup> Research conducted by Aulia Azizah et al. (2018) showed that the average systolic blood pressure in the control group was 140.27 mmHg and the average diastolic blood pressure in the control group was 96.18 mmHg.<sup>12</sup>

The researcher's assumption of the control group after taking antihypertensive drugs is that the majority of systolic blood pressure will not decrease too significantly. The type of antihypertensive drug is (Amlodipine). The heart muscle and blood vessel walls, the heart rate to slow down and the blood vessels to widen, so that blood pressure can fall.

Based on the results of this study, show that systolic blood pressure is 146.60 mmHg, with a standard deviation value of 11.816 a minimum value of 100, and a maximum value of 172, while diastolic blood pressure is 91.35 mmHg with a standard deviation value of 4.146 with a minimum value of 85 and a maximum value. 130. The results of research conducted by Susi Wahyuning Asih (2018), there was a change in the mean paired t-test of respondents' systolic blood pressure from 154,444 mmHg before they were given bay leaf boiled water to 140 mmHg after it was carried out, while the average diastolic blood pressure before the procedure was carried out was 100 mmHg became 98 mmHg after the procedure.<sup>13</sup> This research is in line with research conducted by Putri Dafriani (2016) that the mean systolic blood pressure of respondents was 121 mmHg, with a minimum blood pressure of 110 mmHg and a maximum blood pressure of 150 mmHg, the respondent's diastolic blood pressure was 76 mmHg with a minimum blood pressure of 70 mmHg, blood pressure maximum 90 mmHg.<sup>14</sup>

The researchers assume this is because boiled bay leaves contain minerals and flavonoid compounds which can dilate blood vessels and reduce blood pressure on the walls of the arteries so that blood pressure decreases.

From the independent test results above, it is known that the average systolic blood pressure in the intervention group was 146.60 mmHg with a standard deviation value of 11.816, and the systolic blood pressure in the control group was 91.36 mmHg with a standard deviation value of 10.753 and a p-value of 0.781.  $< 0.05$ , then these results can be concluded that systole in the intervention and control, namely,  $H_0$  was accepted and  $H_a$  was rejected, which means there is no difference in the mean systolic blood pressure. The average diastolic blood pressure in the intervention group was 91.36 mmHg with a standard deviation of 4,146, and the mean diastolic blood pressure in the control group was 90.75 mmHg with a standard deviation of 7.786 and a p-value of 0.304  $< 0.05$ , so it can be concluded that in the intervention and control groups,  $H_0$  was accepted and  $H_a$  was rejected, which means that there is no effectiveness of the combination therapy of leaf decoction. Greetings and honey on blood pressure in hypertension sufferers at Posbindu Buncis in the working area of the Kemiri Muka Community Health Center, Depok City in 2022.

The results of research conducted by Ningsih (2018) showed that there was a change in the mean systolic blood pressure of respondents from 154,444 mmHg before they were given bay leaf boiled water to 140 mmHg after this was done. The paired t-test shows a p-value of 0.000, which means that  $H_0$  is rejected, in other words, bay leaf boiled water affects reducing systolic blood pressure in elderly people with hypertension. Meanwhile, the average diastolic blood pressure before the procedure was 90 mmHg to 75.55 mmHg after the procedure. The paired t-test shows a p-value of 0.087 greater than  $\alpha 0.05$ , which means that  $H_0$  is accepted, or bay leaf boiled water has no effect on reducing diastolic blood pressure in elderly people with hypertension.<sup>15</sup>

The researcher assumes that bay leaves can reduce serum triglyceride levels because bay leaves contain several compounds such as saponins, flavonoids, tannins, and niacin. The flavonoids in bay leaves function as antioxidants which can prevent oxidation of body cells. The higher the oxidation, the higher the prevalence of degenerative diseases, so the flavonoid content of bay leaves can prevent hypertension and lower blood cholesterol.

### Conclusion

There is no effectiveness of the combination therapy of boiled bay leaves and honey on blood pressure in hypertension sufferers at the Bean Post Bindu in the working area of the Kemiri Muka Community Health Center, Depok City in 2022.

### Conflict of interest

This research is independent. Not bound by individual or group interests.

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