

Reducing Blood Pressure for the Elderly with Hypertension by Consuming Bay Leaves Decoction and Coriander Seeds Decoction

Ulfatul Muflihah^{1*}, Maridi Maridi¹, Indra Ayu Nur Kholifah¹, Marissa Divya Sharma¹

ABSTRACT

OBJECTIVE: To analyze the differences of effectiveness between bay leaf decoction and coriander seed decoction in reducing blood pressure in elderly individuals with hypertension.

METHODOLOGY: The research design used a Quasi-Experimental Design with two groups and pre- and post-tests. The sampling technique used was purposive, with a total sample of 66 respondents. 33 respondents consumed bay leaf decoction, and 33 consumed coriander seed decoction. The data analysis used paired-samples t-tests and independent t-tests.

RESULTS: The results of this study showed that bay leaf and coriander seed decoctions were effective in reducing blood pressure in elderly individuals with hypertension. The results of the independent t-test showed a p-value of 0.000, indicating a difference between consuming bay leaves decoction and coriander seeds decoction. The bay leaf decoction was more effective, with a mean difference in Mean Arterial Pressure of 11.93 mmHg.

CONCLUSION: Consuming bay leaf decoction is more effective for reducing blood pressure in elderly individuals with hypertension.

KEYWORDS: Bay Leaves; Blood Pressure; Coriander Seeds; Elderly; Hypertension

INTRODUCTION

Older adults frequently develop hypertension due to age-related vascular changes, including arterial wall stiffness or reduced elasticity, and impaired exchange of nutrients and metabolic waste between cells and blood, resulting from capillary wall thickening. Consequently, systolic and diastolic blood pressures increase as the vascular walls lose compliance. This condition is also associated with a decline in myocardial contractility, leading the heart to work harder to maintain adequate oxygen and nutrient delivery throughout the body¹. Hypertension is often referred to as a “silent killer” because it typically remains asymptomatic until serious complications develop. Many individuals are diagnosed only after target organ damage has occurred, which may involve the brain, heart, kidneys, and retinal blood vessels, and in severe cases, can lead to death².

The burden of hypertension remains a major public health concern in Indonesia. Data from the 2023 Indonesian Health Survey indicated that the prevalence of hypertension, determined through direct blood pressure measurements, reached 30.8% nationally and 30.9% in East Kalimantan Province. The prevalence demonstrated a clear age-related trend, increasing to 49.5% among individuals aged 55–64 years, 57.8% among those aged 65–74 years, and 64.0% among individuals aged 75 years and older³.

Blood pressure reduction can be achieved through various approaches, including the use of herbal and complementary therapies. Among commonly used herbal preparations are bay leaf (*Syzygium polyanthum*) and coriander seed (*Coriandrum sativum*) decoctions, which are traditionally believed to have antihypertensive effects. In Indonesia, many individuals prefer herbal remedies because they perceive them as more natural, with fewer side effects, and as generally more affordable and accessible than conventional medications. Bay leaves (*Syzygium polyanthum*) contain various bioactive compounds, including flavonoids, tannins, saponins, and essential oils. The flavonoid components act as antioxidants, helping prevent cellular oxidation. These antioxidant properties contribute to the potential of bay leaf flavonoids in preventing the development of hypertension⁴.

Coriander seeds (*Coriandrum sativum*) contain essential minerals and water, which may help lower blood pressure in individuals with hypertension. The key minerals present in coriander include calcium, phosphorus, iron, and magnesium. Calcium plays a crucial role as a structural component of bone and in maintaining normal blood pressure levels. Adequate calcium intake contributes to blood pressure regulation by balancing sodium and potassium concentrations within the body⁵. The antihypertensive mechanism of active compounds in coriander is primarily attributed to its flavonoid content. Flavonoids have been associated with protective effects on endothelial function and inhibition of platelet aggregation, which may contribute to the reduction of blood pressure and the risk of coronary heart disease.

¹Faculty of Nursing Science, Universitas Muhammadiyah Kalimantan Timur, Samarinda, Indonesia.

Correspondence: um207@umkt.ac.id
doi: 10.22442/jlumhs.2026.01535



Additionally, flavonoids exert their antihypertensive action by inhibiting angiotensin-converting enzyme (ACE) activity and promoting diuretic effects⁹.

Evidence from several previous studies has demonstrated that the administration of bay leaf (*Syzygium polyanthum*) decoction significantly reduces blood pressure in individuals with hypertension⁷⁻¹⁰. Likewise, the consumption of coriander seed (*Coriandrum sativum*) decoction has also been shown to be effective in reducing blood pressure among hypertensive patients¹¹⁻¹³.

To date, as per the author's knowledge, no studies have compared the effectiveness of boiled bay leaves with that of boiled coriander seeds in lowering blood pressure in older adults with hypertension. Therefore, researchers are interested in conducting a study to analyze the effects of boiling bay leaves and coriander seeds on lowering blood pressure in older adults with hypertension. They also analyzed the differences in effectiveness between boiled bay leaves and boiled coriander seeds in lowering blood pressure in older adults with hypertension.

METHODOLOGY

Study Design

This quantitative study employed a quasi-experimental design with two groups and pre- and post-test assessments. Two groups of participants received different interventions — boiled bay leaves and boiled coriander seeds — and their blood pressure was measured before and after the intervention to determine the difference in effectiveness.

Population and Sample

This study was conducted in one of the community health centre service areas in Indonesia, from August to September 2022.

The participants in this study were older adults diagnosed with stage 1 hypertension. The inclusion criteria included being aged 55 years or older, having no complications, currently taking antihypertensive medication, being fully conscious, and providing informed consent to participate. A total of 66 respondents were selected through purposive sampling, with 33 assigned to the group receiving the boiled bay leaf intervention and 33 to the group receiving the boiled coriander seed intervention; no control group was included.

Instrument

Blood pressure was measured using a digital sphygmomanometer.

In the bay leaf decoction group, participants received 100 mL of boiled bay leaf water, administered twice daily in the morning and evening for five consecutive days. In the coriander seed decoction group, participants received 150 mL of boiled coriander seed water, administered once daily in the morning for the same duration.

The bay leaf decoction was prepared using 10 fresh bay leaves (*Syzygium polyanthum*) and 300 mL of

potable water. The leaves were thoroughly washed under running water to remove impurities. The cleaned leaves were placed in a stainless-steel pot and boiled with 300 mL of water until the volume was reduced by approximately 200 mL. The mixture was stirred briefly and then allowed to steep for 20 minutes with the leaves fully submerged. After cooling to room temperature, the decoction was filtered and stored in a clean, closed container. Participants were instructed to consume 100 mL of the bay leaf decoction twice daily in the morning and evening before meals, for the duration of the intervention period¹⁴.

The coriander seed decoction was prepared by adding 3 g of coriander seeds (*Coriandrum sativum*) to 400 mL of water, which was then brought to a boil and reduced to half volume (approximately 150 mL). Based on nutritional composition data, 3 g of coriander seeds contain approximately 53.61 mg of potassium, 18.9 mg of calcium, and 2.73 mg of sodium. After boiling, the decoction was cooled to room temperature and filtered before use. Participants consumed 150 mL once daily after breakfast throughout the intervention period¹⁵.

To avoid potential pharmacokinetic interactions, participants were instructed to maintain a 2-hour interval between the administration of their prescribed antihypertensive medication and the consumption of the herbal decoction (bay leaf or coriander seed).

Data Analysis

The data management process carried out was editing, coding, data entry, and data analysis using a paired sample t-test to test whether there was an effect of giving boiled bay leaves and boiled coriander seeds on reducing blood pressure and independent t-test to test whether there was a difference between boiled bay leaves and boiled coriander seeds to reduce blood pressure in the elderly with hypertension.

Ethical Statement

This study applied ethical principles in research, namely informed consent, anonymity, confidentiality, autonomy, beneficence, justice, veracity, and non-maleficence. This study was conducted after obtaining ethical clearance from the Health Research Ethics Commission of the Faculty of Medicine, Mulawarman University, Samarinda, with numbers 208/KEPK-FK/XII/2022 and 215/KEPK-FK/XII/2022.

RESULTS

Characteristics of Respondent

The results of this study are presented in the form of a frequency table and percentages of respondent characteristics by age and gender categories. In each of the 55-65 and 66-74 age categories, half of the respondents were respondents. Next, the results of the respondent characteristics based on gender showed that the majority were female. Related data regarding respondent characteristics by age and gender are presented in **Table I**.

Table I: Characteristic Respondents

Characteristics	f	%
Gender		
Female	39	59.1
Male	27	40.9
Age (Years) (66)		
55-65	33	50
66-74	33	50
Medical Treatment		
Amlodipine 5mg	26	39.4
Amlodipine 10mg	31	47.0
Captopril 25mg	7	10.6
Candesartan 8mg	1	1.5
Candesartan 16mg	1	1.5

Mean Arterial Pressure (MAP) after Intervention

The results for changes in Mean Arterial Pressure (MAP) in older adults with hypertension before and after consuming boiled bay leaves and boiled coriander seeds are shown in **Tables I and II**. The results of the paired sample t-test showed that p value = 0.000 ($p < 0.05$), there was an effect of giving boiled bay leaves on reducing blood pressure in the older adults with hypertension. Changes in MAP in the older adults with hypertension before and after consuming boiled coriander seeds showed of significant effect ($p = 0.000$; $p < 0.05$) as determined by of paired-samples t-test.

Table III shows that there is a difference in the average decrease in MAP in the bay leaf decoction group (11.93) and the coriander seed decoction group (11.45). The results of the independent t-test show a p -value = 0.000 ($p < 0.05$). This indicates a difference in the effectiveness of administering bay leaf and coriander seed decoctions. The results of the average decrease in MAP show that administering bay leaf decoction decreases MAP by a mean of 11.93 mmHg.

Table II: Changes in MAP in Elderly Patients with Hypertension Before and After Consuming Boiled Bay Leaves and Boiled Coriander Seeds

Intervention	Mean	Mean Different	Standard Deviation	P value
Bay Leaf Decoction	Pre-Test 113.73	11.93	2,906	0,000
	Post Test 101.80		2,911	
Coriander Seed Decoction	Pre-Test 109.47	11.45	3,836	0,000
	Post Test 98.01		3,328	

Table III: Differences in MAP in Elderly Hypertension Sufferers Before and After Consuming Boiled Bay Leaves and Boiled Coriander Seeds

Intervention	Mean Different	n	Standard Deviation	P value
Bay Leaf Decoction	11.93	33	2,911	0,000
Coriander Seed Decoction	11.45	33	3,328	

DISCUSSION

The results of this study found that both boiled bay leaves and boiled coriander seeds lowered blood pressure in older adults with hypertension. Furthermore, there was a difference in effectiveness between boiled bay leaves and boiled coriander seeds, with boiled bay leaves showing greater blood pressure-lowering effects in older adults with hypertension.

Based on the results of previous research, it was reported that there was an effect of giving boiled bay leaves, which was reported to reduce blood pressure in respondents with hypertension⁷⁻¹⁰. Bay leaves contain flavonoids, which function as antioxidants that can prevent cell oxidation in the body. The flavonoid content in bay leaves can be used to control hypertension, lower cholesterol levels, lower blood sugar levels and lower uric acid levels¹⁰. Previous researchers conducted regular administration of boiled bay leaves for 7 days with 2 doses in the morning and evening before meals, with 15 bay leaves with 750 cc of water boiled for 15 minutes and consumed as much as 200 cc, more effectively lowering blood pressure (systolic blood pressure decreased by 10-15 mmHg during 7 days of measurement)⁹. In the pre-hypertension group, consuming boiled bay leaf water was shown to be effective in lowering blood pressure, with the average result of systolic and diastolic blood pressure dropping from 130.71 and 87.86 mmHg to 121.86 and 85.14 mmHg, respectively¹⁶.

Giving boiled coriander seeds has been proven effective in lowering blood pressure in patients with hypertension¹¹⁻¹³. The content of coriander seeds plays a very important role in reducing blood pressure, including systolic, diastolic, and MAP. The flavonoids in coriander act as ACE inhibitors, preventing angiotensin II from forming in the blood vessels and improving blood flow. These flavonoids can also act directly on the smooth muscle of arteries, causing vasodilation. They also act as a diuretic by absorbing sodium ions from cells into the renal tubules, increasing the rate of excretion in the glomeruli. Absorbed sodium accumulates in the urine, resulting in increased urine production⁶.

The distinction of the present study from previous research lies in its direct comparison of the antihypertensive effects of bay leaf (*Syzygium polyanthum*) and coriander seed (*Coriandrum sativum*) decoctions. Moreover, unlike most previous investigations, this study did not employ a control group, which may influence the interpretation of the observed outcomes.

CONCLUSION

This study found that boiled bay leaves and boiled coriander seeds can lower blood pressure in older adults with hypertension. Comparing the two herbal decoctions, boiled bay leaves were more effective than boiled coriander seeds. Boiled bay leaves were

more effective than boiled coriander seeds at lowering blood pressure in older adults with hypertension.

Limitations: This study has several limitations. The absence of a control group limits the ability to establish causal relationships between the interventions and the observed changes in blood pressure. In addition, the study was conducted in a single community health centre and had a relatively small sample size, which may limit the generalizability of the findings to broader populations.

Future studies are recommended to include a larger, more diverse sample, employ randomized controlled designs, and extend the duration of the intervention to better assess the long-term effects of bay leaf (*Syzygium polyanthum*) and coriander seed (*Coriandrum sativum*) decoctions on blood pressure regulation.

ACKNOWLEDGMENT

We thank LPPM Universitas Muhammadiyah Kalimantan Timur for the financial support of this study.

Ethical permission: Mulawarman University, Samarinda, East Kalimantan, Indonesia, ERC approval letter No. 208/KEPK-FK/XII/2022 and 215/KEPK-FK/XII/2022.

Conflict of Interest: Authors declare no competing interests in the study.

Financial Disclosure/Grant Approval: Research funding from LPPM Universitas Muhammadiyah Kalimantan Timur.

Data Sharing Statement: The corresponding author can provide the data proving the findings of this study on request. Privacy or ethical restrictions bound us from sharing the data publicly.

AUTHOR CONTRIBUTION

Muflihah U: Contributed to determining the concept, doing data analysis, and writing results.

Maridi M: Contributed to research methodology, writing the abstract and conclusion parts.

Kholifah IAN: Contributed to the research ethics, writing background and methodology part.

Sharma MD: Contributed to research methodology, writing background and discussion part.

REFERENCES

1. Dewi SR. Textbook of Gerontic Nursing. Yogyakarta: Deepublish; 2014.
2. Sari YNI. Making Peace with Hypertension. Jakarta: Bumi Medika; 2017.
3. Indonesian Ministry of Health, BKP. Indonesian Health Survey. 2023. Available from: <https://www.badankebijakan.kemkes.go.id/en/hasil-ski-2023/>
4. Edi J. Hypertension Aborted Thanks to Herbs. Printed by I. T. Y, editor. Central Java: FMedia (Imprint of AgroMedia Pustaka); 2013. 102 pages.
5. Astawan M. Functional foods for optimal health. Bogor. 2011.
6. Utami VN, Hadisaputro S, Rahayu S. The Effect of Coriander (*Coriandrum Sativum*) Extract on Changes in Blood Pressure in Postpartum Rats. *J Soedirman Nursing*. 2016; 11(3): 174–85.
7. Aris A. The Effect of Bay Leaf Decoction (*Syzygium Polyanthum*) on Reducing High Blood Pressure in Plosowahyu Village, Lamongan District, Lamongan Regency. In: Proceedings of the 2018 National Seminar: The Role and Responsibilities of Health Workers in Supporting the National Health Program. 2018. p. 199–208.
8. Nurhayati E. Latifah, Lubis M. Yanis. The Effect of Bay Leaf (*Syzygium polyanthum*) Boiled Water on Lowering Blood Pressure in Hypertension Patients in Neighborhood I, Sei Agul Village, 2018. *J Ilm PANNMED (Pharmacist, Anal Nurse, Nutr Midwifery, Environ Dent*. 2019; 13(2): 98–101.
9. Aji PT, Sani FN. The Effect of Bay Leaf Boiled Water Therapy on Blood Pressure Changes in Hypertension Patients in the Tempurejo Jumapolo Karanganyar Region. *Viva Med J Health, Midwifery, and Nursing*. 2021; 14(02): 139–52.
10. Cholifah N, Puspitasari I. The Effect of Bay Leaf Boiled Water on Blood Pressure Changes in Hypertension Patients in Purwosari Village and Sunggingan Village, Purwosari Kudus Community Health Center Area. 2022; 13(1): 230–41.
11. Alhusna R, Mahmudah R, Basit M. The Effect of Coriander Seed Decoction on Lowering Blood Pressure in Hypertension Patients at Sungai Tabuk Community Health Center 2. *J Nurs Army*. 2023; 4(1): 8–14.
12. Yunia A, Suhariyanti E, Priyanto S. The Difference in Effectiveness of Coriander Decoction and Turmeric Decoction on Blood Pressure in Elderly Hypertensive Patients. In: URECOL: The 10th University Research Colloquium 2019. 2019; 676–87.
13. Ratnasari D, Alwi F, Napitupulu M. The Effect of Coriander Seed Decoction on Lowering Hypertension. *Aufa Royhan University*; 2019.
14. Astrid S. *Magical Plants: Eradicating Diseases with Toga (Medicinal Plants) Family*. First edition. East Jakarta: Bibit Publisher; 2016. 1-192.
15. Harun, Iriyanti H. Effectiveness of coriander decoction with turmeric decoction on blood pressure in hypertensive patients. *J Health Info*. 2021; 11(1): 349–58.
16. Dewi WK, Syukrowardi DA. Comparison of the Effects of Bay Leaf Water and Soursop Leaf Water on Blood Pressure in the Pre-hypertension Group in the Gembong Community Health Center Work Area, Serang. *CHMK Health J*. 2019; 3(2): 11–9.

