Case Study

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Application of Red Ginger Decoction (*Zingiber Officinale Var. Rubrum)* to lower blood pressure In Hypertension Patients

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Abstract

Background: Hypertension is a dangerous condition, especially at the age of 40, and there is an increase in the number of sufferers. One of the non-pharmacological treatments is red ginger decoction (*Zingiber Officinale Var. Rubrum).* **Purpose**: find out the decrease in blood pressure in the administration of red ginger decoction. **Methods**: Case study research design, conducted by observing blood pressure in 3 respondents which was carried out for 7 days. **Results :** Average decrease between 5 – 10 mmHg in Systole and 10 – 15 mmHg in Diastole pressure. **Conclusion**: Red ginger decoction has been proven to lower blood pressure in hypertensive patients, it can be used as a complementary therapy. However, during the administration of the stew, the condition of blood pressure must be monitored before giving the decoction.
Keywords: Hypertension; Red ginger; *Zingiber Officinale Var. Rubrum*

1. INTRODUCTION

Hypertension is a circulatory condition that is dangerous to health especially those over the age of 40 and is more dangerous because some people declare no obvious symptoms, which in prevalence is estimated to be 15%-20% worldwide (Yuswar, Susanti, & Az-zahra, 2019). World Health Organization noted that there are 1.13 billion people suffering from hypertension, continuing to increase by 1.5 billion by 2025 with 25% being adults (WHO, 2018). In Indonesia according to the results Riskesdas (2018) Based on measurements in the population aged ≥ 18 years old 34.1%, with an estimated number of hypertension cases of 63,309,620 people and there were 427,218 deaths, most of which did not receive regular treatment 32.3% (Kemkes RI, 2019). In East Kalimantan, the number of sufferers in the January-May 2022 period reached 63,000. This number increased compared to 2020 (January-December) as many as 52,565 patients (Dian, Wiyadi, & Era, 2023).

Treatment of hypertension includes pharmacological and non-pharmacological treatment including changing a healthy lifestyle, dietary arrangements, losing weight, exercising and quitting smoking (Fanny Metungku, Mayusef Sukmana, Khumaidi, 2023).

Modification of daily routines and return to natural products are examples of nonpharmacological therapies (return to nature). It involves using local ingredients that are highly preferred by residents due to their high potassium and antioxidant content. Blood pressure can now be effectively treated with herbal remedies, of which ginger is a prime example (Probosiwi, Ilmi, Laili, & Bin Abd Kadir, 2023). The viltase component in ginger blocks calcium channels in blood vessel cells which stimulates the contraction of smooth muscles of the artery walls, in addition to that there is also a potassium content that prevents renin secretion and angiotension causes the excretion of salt water to increase, causing a decrease in blood pressure (Linnasari, Solehudin, Yuliza, & Tambunan, 2023)

Ginger decoction can also lower blood pressure due to the fact that warm water facilitates blood circulation, stabilizes blood flow, and improves heart function (Najim, 2017). In addition, ginger can help treat digestive problems that increase the risk of constipation and colon cancer, treat flu, relieve pregnancy-related nausea, reduce menstrual cycle pain, lower the risk of colorectal cancer, and improve heart health (Fletcher, 2023) (Aryanta, 2019). Although ginger has a positive effect on hypertension, it is necessary to be aware of its administration to pregnant women because it is at risk of developing cardiac arrhythmias, stimulating irritable bowel syndrome, duodenal ulcers, bile secretion, and heartburn. Those taking antiarrhythmic medications may be advised not to take ginger and may be advised to take appropriate alternatives (Shawahna & Taha, 2017). This study aims to determine the decrease in blood pressure in the administration of red ginger decoction (*Zingiber Officinale Var. Rubrum)* in people with hypertension.

2. METHOD

This study used a case study design, blood pressure observation was carried out on 3 respondents before and after giving boiled red ginger water for 7 days. The method of giving ginger decoction is 4 grams of ginger boiled with 200 cc of water for 10 minutes. The boiled water was drunk in the morning and evening and blood pressure measurements were taken on the first day before the administration of the decoction and the seventh day after the

administration of ginger decoction water. The respondent criteria were 25 – 45 years old, had a history of > blood pressure of 140/99 mmHg in the last 1 year and were not currently taking hypertension medication.

3. RESULT AND DISCUSSION

From **table 1 of the** characteristics of the respondents in the study above, there were 3 respondents, with male and female genders, respondents with an average age of 40 years, who had suffered from hypertension for a long time from 2 to 4 years.

Tabel 1. Karakteristik Respondents

No	Respondent	Sex	Age	Hypertention History
1	P1	Male	42	4 years
2	P2	Female	43	2 years
3	P3	Female	45	3 years

From related research, hypertension patients with the female sex have a higher number, which is 65% compared to men, which is 35%. It is suspected that women are likely to be more stressed than men. Stress is related to hypertension through sympathetic nerves that increase blood pressure. The hormone epinephrine or adrenaline will be released in a stressful state. Adrenaline will increase blood pressure through arterial contraction (vasoconstriction) and increased heart rate, thus people will experience an increase in blood pressure. In addition, women over the age of 40 will experience menopause which causes estrogen hormones to decrease (Agustina, Annisa, & Prabowo, 2015). Women who have gone through menopause have several effects that will affect the work in the body. This is due to a decrease in the levels of FSH and Estrogen hormones in regulating homeostatic balance in the body. One of the direct effects in the decrease in hormones is disorders in blood vessels. The loss of these hormones results in higher LDL and salt sensitivity so that it can increase heart work and increase blood pressure (Suryonegoro, Muzada Elfa, & Noor, 2021). This study is also in accordance with *the American Hypertension Association* which explains that in developed countries the largest proportion of hypertension sufferers are in the age group over 64 years old, but in developing countries it is in the age group of 45-64 years (Tjekyan, 2014).

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The results of blood pressure examination after giving red ginger decoction can be seen in **table 2**, showing that the average blood pressure before being given systolic and diastolic red ginger decoction is 140 and 100 mmHg, and the average blood pressure after being given systolic and diastolic red ginger decoction is 130 and 90 mmHg.

Table 2. Blood pressure before and after administration of red ginger decoction

Respondents	Blood Pressure	
	Pre	Post
P1	140/100	120/95
P2	140/90	120/90
P3	150/90	130/80

Based on the results of **table 3** of the difference in blood pressure reduction, the above study showed an average decrease in blood pressure after being given red ginger decoction *(Zingiber officinal var. rubrum)* systolic of 15.5 mmHg while diastolic was 10 mmHg.

Table 3. Difference in Blood Pressure Reduction

Respondents	Difference in Blood Pressure Reduction	
	Systolic	Dyastolic
P1	20	5
P2	20	0
P3	20	10

Blood pressure can now be effectively treated with herbal remedies, of which ginger is a prime example (Probosiwi, Laili, Ilmi, & Zain, 2023). The chemical component of gingerol, found in ginger, serves to block calcium channels in blood vessel cells called viltase. It stimulates the blood arteries to widen or narrow, which lowers blood pressure by reducing the contraction of the smooth muscles of the artery walls. Potassium is another ingredient in ginger that prevents the release of renin and angiotensin. Increased excretion of

water and salt, which results in less water and salt retention in the blood and a decrease in blood pressure (Yunus, Kadir, & Lalu, 2023).

According to researchers, the content of red ginger is evident from the dose of red ginger boiled water that researchers use can lower blood pressure. Previous research used a dose of 100 cc of ginger water from 4 grams of ginger cut into small pieces and boiled with 200 cc of water for 10 minutes. After that, filtered as much as 100 cc of water, honey can be added in the ratio of 100 cc: 2 tablespoons, and consumed regularly once every day for five consecutive days. Meanwhile, this study increased the dose from 5 consecutive days to seven consecutive days with the result that it could reduce blood pressure by 20 mmHg and diastolic by 15 mmHg. The decrease in blood pressure in hypertensive patients is due to ginger having strong minerals and chemical components that prevent and treat diseases. Ginger is rich in nutrients, including calories, carbohydrates, fiber, protein, salt, iron, potassium, magnesium, phosphorus, zeng, vitamin C, vitamin B6, vitamin A, riboflavin, and niacin (Redi Aryanta, 2019).

The decrease in blood pressure in respondents was not only because the respondents consumed red ginger boiled water, but there were other factors that supported the reduction of blood pressure, namely reducing excessive salt consumption, reducing smoking habits, regular exercise and avoiding stress. At the time of the study, respondents said that since they found out they had hypertension, respondents began to avoid foods that contained too much salt. The choice of the type of food consumed will be able to affect the reduction of blood pressure in hypertensive patients in addition to the administration of herbal medicines that can lower blood pressure in the body in hypertensive patients (Haryono, 2013)

4. CONCLUSION

Red ginger decoction has been proven to lower blood pressure in hypertensive patients with an average decrease of between 5 – 10 mmHg in Cistole and 10 – 15 mmHg in Diastole pressure, but nevertheless during its administration the condition of blood pressure must be monitored before giving the decoction.

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