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Comparison of the Effectiveness of Moringa Leaf Tea and Rosella Flower Tea on Reducing Blood Pressure in Mild Hypertension Patients: Case Study

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Abstract: The number of people with hypertension continues to increase every year, it is estimated that by 2025 there will be 1.5 billion people affected by hypertension, and it is estimated that every year 9.4 million people die from hypertension and its complications. This case study aims to compare the effectiveness of Moringa leaf tea and Rosella flower tea in reducing blood pressure in menopausal women who experience mild hypertension. The research respondents were 2 menopausal women who suffered from mild hypertension, one respondent was given intervention in the form of Moringa leaf tea while the other respondent was given intervention in the form of rosella flower tea. The intervention was provided for 14 days to see a comparison of the effectiveness of the two interventions provided. The reduction in blood pressure in respondents with the Moringa leaf tea intervention was 15/11 mmHg, while the reduction in blood pressure in respondents with the rosella flower tea intervention was 7/7 mmHg, there was a difference in blood pressure of 8/4 mmHg. Thus, it can be concluded that giving Moringa leaf tea is more effective in reducing blood pressure in menopausal women with mild hypertension compared to giving rosella flower tea. Moringa leaf tea can be developed as an alternative therapy to lower blood pressure in people with mild hypertension.

Keywords: moringa leaf tea, rosella flower tea, hypertension patients
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Introduction

Hypertension is the main cause of premature death worldwide. Based on data from the World Health Organization (WHO) in 2023, it is estimated that 1.28 billion adults aged 30-79 years worldwide will suffer from hypertension (WHO, 2023). They have been shown to be even younger (Puspita et al., 2023).

The number of people with hypertension continues to increase every year, it is estimated that by 2025 there will be 1.5 billion people affected by hypertension, and it is estimated that every year 9.4 million people die from hypertension and its complications such as heart attacks, strokes and kidney failure (WHO, 2023).

Basic Health Research (Riskesdas) in 2018 stated that the estimated number of hypertension cases in Indonesia was 63,309,620 people, while the death rate due to hypertension was 427,218 deaths. West Java is in second place as the province with the highest cases of hypertension, namely 39.6%. In Garut Regency in 2018, 82,638 cases of hypertension were recorded spread across 67 Puskesmas work areas in Garut Regency

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(Indonesian Ministry of Health, 2018; Garut District Health Service, 2018).

Hypertension occurs most often in the elderly, especially women. Elderly women have a 41% higher risk of developing hypertension compared to men because menopause will result in decreased levels of the hormone estrogen which functions to increase High-Density Lipoprotein (HDL) cholesterol levels to prevent atherosclerosis (Maringga, 2020; Amalia, 2022).

Hypertension treatment can be done with pharmacological and non-pharmacological therapy. Pharmacological therapy is by using antihypertensive drugs, while non-pharmacological therapy can be by changing unhealthy lifestyle patterns such as smoking, reducing excess weight, avoiding alcohol, and also getting enough rest (Somantri, 2020). In hypertension, blood pressure tends to fluctuate over a long period of time, so treatment is required for a long time, perhaps even for life (Triyanto, 2014). This will certainly make hypertension sufferers feel bored of taking medication. Therefore, non-pharmacological therapy can be used as supportive therapy (Oktavianus, 2014). There are many types of non-pharmacological therapy that can be done to lower blood pressure. One of the non-pharmacological therapies currently being developed is consuming herbal plants in the form of Moringa oleifera lam leaf tea and rosella flower tea (hibiscus sabdariffa linn).

Moringa leaves are rich in potassium, calcium and magnesium. Potassium functions to control blood sodium levels and helps reduce high blood pressure. Calcium helps lower blood pressure by regulating parathyroid hormone and can also act as a natriuretic compound, while magnesium helps regulate the activity of the sodium potassium/ATPase pump and is at normal levels (Pangestu, 2023). Rosella flowers contain anthocyanins, phenolics, theroine, leucine, valine, glycine and ascarbonic acid which can help improve blood circulation by reducing the degree of viscosity (thickness) of blood, so that the heart's work is lighter and blood pressure is lower (Haidar, 2016).

Treatment with natural ingredients that is economical and has minimal negative effects is a good solution for dealing with health problems, so that it can attract people's interest in using medicines made from natural ingredients.

Method

This research uses a descriptive case study approach and literature review to determine the comparative effectiveness of Moringa leaf tea and Rosella flower tea in reducing blood pressure in menopausal women who experience mild hypertension. The research respondents were menopausal women in the independent practice of midwife "T" Garut Regency who experienced mild hypertension (systolic 140-159 mmHg, and/or diastolic 90-99 mmHg). The number of respondents was two people with two different interventions. The first respondent was given intervention in the form of giving Moringa leaf tea while the second respondent was given intervention in the form of giving rosella flower tea. The intervention was carried out for 14 days starting from 17 to 31 August 2023, then on the 15th day, namely 1 September 2023, blood pressure measurements were carried out again on both respondents to see a comparison of the effectiveness of the interventions that had been given.

Result and Discussion

This case study aims to compare the effectiveness of Moringa leaf tea and Rosella flower tea in reducing blood pressure in patients with mild hypertension. Hypertension is a state of high blood pressure when at rest the systolic blood pressure is 140 mmHg and above or the diastolic blood pressure is 90 mmHg and above after repeated measurements. Hypertension is classified into optimal categories (systolic <120 mmHg and diastolic <80 mmHg), normal (systolic 120-129 mmHg and/or diastolic 80-84 mmHg), high normal (systolic 130-139 mmHg and/or diastolic 85-89 mmHg), grade 1 hypertension/mild hypertension (systolic 140-159 mmHg, and/or diastolic 90-99 mmHg), grade 2 hypertension/moderate hypertension (systolic 160-179 mmHg, and/or diastolic 100-109 mmHg), grade 3 hypertension/ severe hypertension (systolic ≥180 mmHg, and/or diastolic ≥110 mmHg) and isolated systolic hypertension (systolic ≥140 mmHg and/or diastolic <90 mmHg) (Riyadina, 2019).

The research respondents were two menopausal women with mild hypertension who did not take antihypertensive medication. The results of blood pressure measurements at the first visit on August 17 2023 showed that respondent 1's blood pressure was 149/96 mmHg and respondent 2's blood pressure was 152/94 mmHg. The two respondents were given different interventions. The first respondent was given intervention in the form of giving Moringa leaf tea using dried Moringa leaf tea in the amount of 10 grams/equivalent to 2 teaspoons, brewed using 200 cc of hot water for 5 – 10 minutes or until it changes color, this tea is consumed 2 times a day and drunk in the morning from 07.00 – 08.00 WIB and in the afternoon from 16.00 – 17.00 WIB for 14 days. Meanwhile, the second respondent was given intervention in the form of giving rosella flower tea using dried rosella flower tea in the amount of 2 grams/equivalent to 3 rosella flowers, brewed using 200 cc of hot water for 5 - 10 minutes or until the color changed, this tea was

consumed 2 times. times a day and drunk in the morning from 07.00 – 08.00 WIB and in the afternoon from 16.00 – 17.00 WIB for 14 days.

After administering the intervention for 14 days, blood pressure measurements were carried out again on day 15, namely August 31 2023, where the results showed a decrease in blood pressure in both respondents. The blood pressure in the first respondent was 134/85 mmHg or decreased by 15/11 mmHg, while the blood pressure in the second respondent was 145/87 or decreased by 7/7 mmHg. There was a difference in blood pressure reduction in respondent 1 and respondent 2 of 8/4 mmHg, where the reduction in blood pressure in respondents who were given intervention in the form of Moringa leaf tea was greater than in respondents who received rosella flower tea.

Moringa leaves are rich in potassium, calcium and magnesium. Potassium functions to control blood sodium levels and helps reduce high blood pressure. Calcium helps lower blood pressure by regulating parathyroid hormone and can also act as a natriuretic compound, while magnesium helps regulate sodium potassium/ATPase pump activity and is at normal levels. The results of research conducted by Pangestu (2023) showed that there was a difference in blood pressure before and after giving Moringa leaf tea with a value of p = 0.000, where the average systolic blood pressure before giving Moringa leaf tea was 164.03 and after giving Moringa leaf tea it was 123.53, as well as diastolic blood pressure from an average of 121.72 to 85.42 after administering Moringa leaf tea (Pangestu, 2023).

The active compounds in rosella which play a major role in lowering blood pressure are anthocyanins, phenolics, theroine, leucine, valine, glycine and acarbonic acid. The active compounds contained in rosella flowers can help improve blood circulation by reducing the degree of viscosity (thickness) of blood, so that the heart's work is lighter and blood pressure is lower (Haidar, 2016). Based on the research results of Lismayanti (2023), using the Wilcoxon Signed Rank Test analysis test, a p value of 0.000 was obtained for pre-post test systolic and diastolic blood pressure, which means that there is an effect of giving rosella flower tea to reduce high blood pressure. Likewise, in Wijaya's research (2020) which stated that there was an effect of decoction of rosella flowers (hisbicus sabdariffa) on reducing blood pressure with the results of the Wilcoxon Signed Rank Test analysis, p value = 0.001 on pre-test and post-test blood pressure (Lismayanti, 2023; Wijaya, 2020).

The results of the study showed that Moringa leaf tea was more effective in lowering blood pressure in menopausal women compared to rosella flower tea. This may be due to the levels of antioxidant compounds in Moringa leaf tea such as flavonoids being higher than in rosella flower tea. This is in accordance with the results of research by Rahim (2023) which states that the antioxidant activity of Moringa leaf tea is categorized as a strong antioxidant, while that of rosella flower tea is categorized as a moderate antioxidant (Rahim, 2023).

Conclusion

Giving Moringa leaf tea and rosella flower tea for 14 days to menopausal women with mild hypertension can reduce blood pressure. Moringa leaf tea is more effective in lowering blood pressure in menopausal women who experience mild hypertension compared to rosella flower tea.

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