

Original Research

Siamese Pumpkin Juice (*Sechium Edule* (Jacq.) Sw) To Decreased Blood Pressure Of Postpartum Mother's Hypertension

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ABSTRACT

Background: Postpartum hypertension is Indonesia's second-highest cause of maternal death. The abundant Siamese pumpkin, commonly consumed and containing potassium (167.1 mg) and flavonoids, has a role as an antihypertensive. The proper, easy, and correct dosage must be found to utilize postpartum maternal hypertension therapy.

Methods: Quay's experiment research, randomized pretest-posttest with control group design, consisted of 3 research groups, consisting of 2 intervention groups and 1 control group. Intervention I juiced 501.3 mg once daily plus antihypertensive drugs, Intervention II juiced 584,85 mg once daily plus antihypertensive drugs, and control consumed antihypertensive drugs. The sampling technique used total samples with a retrieval time of 1.5 months and obtained 16 respondents in each group. The intervention begins on the first to the fifth day of the puerperium. Bivariate analysis of systolic and diastolic blood pressure using Repeated Measure Anova.

Results: The intervention group I significant decrease in systolic blood pressure and diastolic blood pressure (p -value 0.000) and intervention group II significant decrease in systolic blood pressure and diastolic blood pressure (p -value 0.000).

Conclusion: Formula Siamese pumpkin juice (584,85 mg) effectively decreased blood pressure in postpartum hypertension patients.

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INTRODUCTION

Hypertension is one of the health problems that cause high pain and maternal death. The initial causes of postpartum hypertension vary Marco et al., (2019) states that 50% of the incidence of hypertension during pregnancy persists in the puerperium (Marco, Catherine A, Thomas, Kelli, Rzecznik, 2019). 61.3% of deaths occur during the puerperium Hypertension causes 26.6% of pregnancy, 12.1% of labor, and 25.5% of pregnancy (Chambali et al., 2019). Indonesia's health profile report in 2019 stated the three highest causes of maternal death, namely bleeding (1,280 cases), hypertension in

pregnancy (1,066 cases), and infection (207 cases) (Kementerian Kesehatan Republik Indonesia, 2020).

Maternal mortality in Central Java in 2020 increased by 25.5%, most of it due to HDK. 61.3% occurred during the puerperium, 26.6% during pregnancy, and 12.1% during childbirth. The three districts with the highest death cases were Brebes, with 62 cases, Grobogan, with 31 cases, and Tegal, with 28 cases. HDK has become a maternal health issue in Tegal Regency from 2020 to 2022.

The treatment of hypertension during pregnancy and postpartum considers various essential things that occur during this time. One combination therapy was used, namely nifedipine and methyldopa, in cases of severe pre-eclampsia (Chambali et al., 2019; Nurmainah et al., 2021). Some studies state that using methyldopa in postpartum can affect mood and trigger postpartum depression (Ministry of Health (MOH), 2018). Utilization of natural ingredients in hypertension management, one of which is using beetroot and star fruit juice with a formulation of 30%:70%, can reduce the systolic mean of 20.46 mmHg and diastolic 3.4 mmHg, but beetroot is a fruit with a relatively high price, so that it cannot be consumed by all people (Retnaningsih & Wijayanti, 2020).

The NHLBI found the Dietary Approaches to Stopping Hypertension (DASH) diet's core. People should eat fruits, vegetables, and other foods rich in potassium, magnesium, calcium, protein, and fiber (National Heart, Lung, 2006). Siamese pumpkin contains potassium (167.1 mg) (Kementerian Kesehatan Republik Indonesia, (2021) and flavonoids that manage hypertension (J.Albarracín et al., 2010). The consumption of Siamese pumpkin juice research Fauziningtyas et al., (2020) has not shown an optimal decrease in blood pressure.

Siamese pumpkin has a relatively low selling value and is commonly consumed. The benefits of Siamese pumpkin in reducing high blood pressure must be felt by the community with easy processing and optimal results, so researchers designed a dosage formulation that could show an optimal decrease in blood pressure.

MATERIALS AND METHOD

This study used a quasi-experiment, randomized pretest-posttest with a control group design consisting of 3 research groups (2 intervention groups and one control group). Intervention I juice 501.3 mg 1 time a day + antihypertensive drugs, Intervention II juice 584,85 mg 1 time a day + antihypertensive drugs, and control consumed antihypertensive drugs. The concentration of Siamese pumpkin juice was increased from the research concentration of Rista et al. (12) to 60% and 70%. This research has been registered with the Health Research Ethics Commission of the Ministry of Health, Semarang No. 013/EA/KEPK/2022.

The study population was a postpartum mother who experienced hypertension and was treated by dr. Soeselo Slawi Hospital, Tegal Regency. The sampling technique was total sampling, with a data collection time of 1.5 months and 16 respondents in each group. The instruments used were respondents' characteristic sheets, PSAS questionnaires with validity test results (Pearson product-moment 0.77) and reliability (alpha Cronbach 0.95) Somerville et al., (2014), observation sheets, tools for blood sampling, and the EasyLite REF 2124 Na/K/Cl/Ca/Li analyzer. OMRON digital sphygmomanometer type HEM 7124 with guaranteed validity and tools for processing Siamese pumpkin juice.

RESULTS

The characteristics of respondents in this study are presented in the following table:

Table 1. Frequency Distribution of Respondents' Characteristics

| Characteristics | Group | | | | | | P ^a |
|---------------------------------------|---------|------|----------------|------|-----------------|------|--------------------|
| | Control | | Intervention I | | Intervention II | | |
| | n | % | n | % | n | % | |
| Age | | | | | | | |
| 21-35 years | 7 | 50 | 7 | 50 | 6 | 42,9 | 0,556 ^a |
| 36-49 years | 7 | 50 | 7 | 50 | 8 | 57,1 | |
| Education | | | | | | | |
| SD | 8 | 57,1 | 8 | 57,1 | 9 | 64,3 | 0,068 ^a |
| SMP | 3 | 21,4 | 5 | 35,7 | 4 | 28,6 | |
| SMA | 1 | 7,1 | 1 | 7,1 | 1 | 7,1 | |
| PT | 2 | 14,3 | 0 | 0 | 0 | 0 | |
| Work | | | | | | | |
| Work | 1 | 7,1 | 1 | 7,1 | 2 | 14,3 | 0,369 ^a |
| Doesn't work | 13 | 92,9 | 13 | 92,9 | 12 | 85,7 | |
| IMT | | | | | | | |
| Normal (18,5-25) | 3 | 21,4 | 3 | 21,3 | 1 | 7,1 | 0,496 ^a |
| Fat ($\geq 25,1$) | 11 | 78,6 | 11 | 78,1 | 13 | 92,9 | |
| Parity | | | | | | | |
| Primipara | 6 | 42,9 | 4 | 38,6 | 2 | 14,3 | 0,652 ^a |
| Multipara | 6 | 42,9 | 8 | 57,1 | 8 | 57,1 | |
| Grande multipara | 2 | 14,3 | 2 | 14,3 | 4 | 28,6 | |
| Anxiety | 14 | 100 | 14 | 100 | 14 | 100 | 0,189 ^a |
| Types of Childbirth | | | | | | | |
| Pervaginam | 5 | 35,7 | 7 | 50 | 10 | 71,4 | 0,243 ^a |
| <i>Sectio Caesarea</i> | 9 | 64,3 | 7 | 50 | 4 | 28,6 | |
| History of HDK | | | | | | | |
| Yes | 10 | 71,4 | 9 | 64,3 | 6 | 42,9 | 0,348 ^a |
| No | 4 | 28,6 | 5 | 35,7 | 8 | 57,1 | |
| Family History of Hypertension | | | | | | | |
| Yes | 7 | 50 | 4 | 28,6 | 10 | 71,4 | 0,244 ^a |
| No | 7 | 50 | 10 | 71,4 | 4 | 28,6 | |

^a Levene Test: Homogeneity of variances * level of significance sig >0,05

Table 1 presents the distribution of characteristics and results of the Levene test. Statistically, the proportion of respondents' characteristics between intervention groups

I, II, and controls were homogeneous or there was no significant difference with p-values >0.05 at age characteristics of 0.556, education 0.068, occupation 0.369, BMI 0.496, parity 0.652, anxiety 0.652, type of childbirth 0.243, history of HDK 0.348, and family history of hypertension 0.244. The age variable describes the highest age at the ages of 36-49 and 21-35, namely 7 respondents (50%) in intervention I and control, but it is different from intervention II, with a total of 8 respondents (57.1%) at the age of 36-49.

The education variable shows that all respondents in the three groups are dominated by respondents with an elementary education background. All respondents in the three largest research groups do not work. The BMI in all three study groups was obese. The parity variable describes the respondents with the same number of birth categories, namely 6 respondents (42.9%) primiparous and 6 respondents (42.9%) multiparous in the control group, while in intervention groups I and II, most of the respondents were in the multiparous category. birth, namely 8 respondents (57.1%).

The type of delivery in the control group was dominated by cesarean delivery. Intervention group I had 6 respondents by vaginal delivery and 6 other respondents by cesarean section, but intervention group II, was dominated by vaginal delivery, with as many as 10 respondents (71.4%). The history of HDK in the control and intervention groups I, which was dominated by respondents, had a history of distribution of 10 respondents (71.4%) and 9 respondents (64.3%), in contrast to the intervention group II, which was dominated by no history of HDK and as many as 8 respondents (57.1%). In the control group, 7 respondents (50%) had a history and 7 respondents (50%) had no history.

In intervention group I there were 10 respondents (71.4%) who had no history, but in intervention group II there were 10 respondents (71.4%) who had a history.

Table 2. Normality and Homogeneity Test of Systolic and Diastolic Blood Pressure

| Variable | Group | | | | | | | | P ^a | |
|--------------------------|--------------|---------|--------------------|----------------|---------|--------------------|-----------------|---------|--------------------|--------------------|
| | Control | | P ^b | Intervention I | | P ^b | Intervention II | | | |
| | Mean±SD | Min-Max | | Mean±SD | Min-Max | | Mean±SD | Min-Max | | |
| Systolic Pretest | | | | | | | | | | |
| Posttest1 | 150,86±6,916 | 142-167 | 0,369 ^b | 151,14±11,231 | 140-178 | 0,054 ^b | 158,79±9,553 | 143-180 | 0,840 ^b | 0,310 ^a |
| Posttest 2 | 149±8,209 | 138-165 | 0,183 ^b | 147,64±11,084 | 135-175 | 0,104 ^b | 153,14±8,328 | 140-170 | 0,753 ^b | 0,534 ^a |
| Posttest 3 | 145,07±8,965 | 135-163 | 0,075 ^b | 142,64±8,590 | 133-163 | 0,139 ^b | 144,86±5,260 | 138-155 | 0,285 ^b | 0,239 ^a |
| Posttest 4 | 141,36±8,509 | 130-161 | 0,055 ^b | 151,14±11,231 | 130-155 | 0,692 ^b | 136,93±7,043 | 126-150 | 0,733 ^b | 0,959 ^a |
| Posttest 5 | 138±8,171 | 126-156 | 0,082 ^b | 133,86±4,769 | 125-144 | 0,645 ^b | 132,14±5,709 | 125-146 | 0,081 ^b | 0,368 ^a |
| | 133,93±6,545 | 125-150 | 0,163 ^b | 129,07±4,428 | 124-140 | 0,098 ^b | 126,29±4,177 | 121-135 | 0,131 ^b | 0,222 ^a |
| Diastolic Pretest | | | | | | | | | | |
| Posttest1 | 100,71±5,757 | 90-110 | 0,478 ^b | 97,79±7,708 | 87-110 | 0,398 ^b | 93,83±7,968 | 80-111 | 0,084 ^b | 0,589 ^a |
| Posttest 2 | 97,29±5,312 | 89-105 | 0,347 ^b | 94,07±8,544 | 80-112 | 0,831 ^b | 96,29±5,863 | 88-104 | 0,059 ^b | 0,089 ^a |
| Posttest 3 | 90,93±5,298 | 82-100 | 0,103 ^b | 85,14±7,177 | 76-98 | 0,129 ^b | 90,79±8,577 | 78-105 | 0,294 ^b | 0,165 ^a |
| Posttest 4 | 87,21±5,605 | 78-98 | 0,986 ^b | 85,21±4,577 | 78-96 | 0,214 ^b | 88,57±9,154 | 77-110 | 0,074 ^b | 0,196 ^a |
| Posttest 5 | 86±5,262 | 78-96 | 0,306 ^b | 85,57±3,031 | 79-89 | 0,103 ^b | 85,29±5,567 | 77-95 | 0,467 ^b | 0,245 ^a |
| | 86,50±3,737 | 80-95 | 0,654 ^b | 82,43±3,502 | 77-91 | 0,397 ^b | 80,93±5,916 | 67-90 | 0,327 ^b | 0,106 ^a |

^a Levene Test: Homogeneity of variances *level of significance sig >0,05

^b Shapiro-Wilk: Test of normality *level of significance sig >0,05

Table 2 shows the results of the data normality and homogeneity tests on variable potassium, systolic blood pressure, and diastolic levels in intervention groups I, II, and controls, with p-values greater than 0.05 indicating that all data on each variable were normally distributed and there was no meaningful difference prior to treatment (homogeneous). Based on the normality and homogeneity of the data, bivariate and multivariate analyses can be carried out using parametric tests.

Systolic Blood Pressure Analysis

Table 3. Differences in Systolic Blood Pressure of Postpartum Hypertensive Mothers

| Systolic Blood Pressure | Control | | Intervention I | | Intervention II | |
|---------------------------|--------------------------|--------------------|--------------------------|--------------------|--------------------------|--------------------|
| | Δ Mean Difference | P-value | Δ Mean Difference | P-value | Δ Mean Difference | P-value |
| Δ Pre-Post 1 | 1,857 | 1,000 ^a | 3,500 | 0,009 ^a | 5,643 | 0,016 ^a |
| Δ Pre-Post 2 | 5,786 | 0,032 ^a | 8,500 | 0,000 ^a | 13,929 | 0,000 ^a |
| Δ Pre-Post 3 | 9,500 | 0,000 ^a | 11,286 | 0,001 ^a | 21,857 | 0,000 ^a |
| Δ Pre-Post 4 | 12,857 | 0,000 ^a | 17,286 | 0,000 ^a | 26,643 | 0,000 ^a |
| Δ Pre-Post 5 | 16,929 | 0,000 ^a | 22,071 | 0,000 ^a | 32,500 | 0,000 ^a |
| Greenhouse-Geisser | | 0,000 ^b | | 0,000 ^b | | 0,000 ^b |

^a Poshoc Bonferroni * level of significance sig <0,05

^b Repeated Measure Anova (Test of Within-Subjects Effects) * level of significance <0,05

Table 3 presents the results of the Repeated Measure ANOVA statistical test. There is a decrease in the mean value of systolic blood pressure in the table on five consecutive days. The Greenhouse-Geisser's P-value in the three study groups was 0.000<0.05. This can be interpreted to mean a significant difference in the mean value of systolic blood pressure at each time.

The results of the Poshoc Bonferroni test showed a p-value of <0.05 in each measurement. It can be concluded that there was a difference in systolic blood pressure before the intervention from the first to the fifth day in the three research groups.

Diastolic Blood Pressure Analysis

Table 4. Differences in Diastolic Blood Pressure of Postpartum Hypertensive Mothers

| Diastolic Blood Pressure | Control | | Intervention I | | Intervention II | |
|---|--------------------------|--------------------|--------------------------|--------------------|--------------------------|--------------------|
| | Δ Mean Difference | P ^b | Δ Mean Difference | P ^b | Δ Mean Difference | P ^b |
| Δ Pre-Post 1 | 3,429 | 0,033 ^b | 3,714 | 0,118 ^b | 2,143 | 1,000 ^b |
| Δ Pre-Post 2 | 9,786 | 0,000 ^b | 12,643 | 0,000 ^b | 7,643 | 0,101 ^b |
| Δ Pre-Post 3 | 13,500 | 0,000 ^b | 12,571 | 0,000 ^b | 9,857 | 0,050 ^b |
| Δ Pre-Post 4 | 14,714 | 0,000 ^b | 12,214 | 0,003 ^b | 13,143 | 0,000 ^b |
| Δ Pre-Post 5 | 14,214 | 0,000 ^b | 15,357 | 0,000 ^b | 27,500 | 0,000 ^b |
| P^a Greenhouse-Geisser | | 0,000 ^a | | 0,000 ^a | | 0,000 ^a |

^a Poshoc Bonferroni * level of significance sig <0,05

^b Repeated Measure Anova (Test of Within-Subjects Effects) * level of significance <0,05

Table 4 presents the results of the Repeated Measure ANOVA statistical test. There is a decrease in the mean value of diastolic blood pressure in the table on five

consecutive days. The Greenhouse-Geisser's P-value in the three study groups was $0.000 < 0.05$. This can be interpreted to mean a significant difference in the mean value of diastolic blood pressure at each time.

The results of the Poshoc Bonferroni test showed that the entire measurement had a p-value of < 0.05 , so it can be concluded that there was a difference in diastolic blood pressure before the intervention from the first to the fifth day in the three study groups, but there were several measurements that showed a p-value of > 0.05 in the intervention group I, which occurred on the first day, and the intervention group II, which occurred on the first day to the third day.

DISCUSSION

This study showed that the percentage of characteristics of study respondents based on age was at most > 35 years by 57.1% in intervention group II. Still, age control of 21–35 years and > 35 years in the intervention group had the same percentage, namely 50%. Following the study Machano & Joho, (2020), 297 mothers aged 21–35 years and 66 mothers aged > 35 years experienced pre-eclampsia during the puerperium.

The educational status of the postpartum mother can indirectly affect her knowledge of health issues, such as the importance of doing an ANC. Postpartum mothers dominated the last academic status in these three study groups with the previous educational status at the elementary school level, namely 57.1% in intervention group I, 64.3% in intervention group II, and 57.1% in the control group. This follows research Hasija et al., (2021) which showed many adverse pregnancies in half of the high-risk women who performed ANC by observing the placenta profile. As many as 4.61% of mothers do not use health services, 8.2% do not do ANC, and 30.08% have poor ANC quality (Simbolon et al., 2015).

Work is one of the socio-economic indicators of the family and greatly affects health. Almost all puerperal mothers did not work, with a distribution of 92.9 % in intervention group I, 85.7 % in intervention group II, and 92.9 % in the control group. This follows the results of research Simbolon et al., (2015), which states that socioeconomic factors that are less able to be influenced by low educational status, rural housing, and low family incomes have been shown to affect low access to health services.

This study showed that the BMI of puerperal mothers was dominated by the obese category (> 25.1), with a distribution of 78.1% in intervention group I, 92.9% in intervention group II, and 78.6% in the control group. According to Roberts JM et al., excessive weight gain during pregnancy causes the formation of excess fat, so toxic substances derived from fat and oxidative pressure cause endothelial dysfunction, which impacts vasoconstriction and hypertension. In addition, continuous vasospasm triggers protein accumulation, causing pre-eclampsia and kidney failure (Nurmainah et al., 2021).

Breastfeeding can reduce BMI and affect other adiposity measures (Aleksandra Obuchowska, Arkadiusz Standyło, 2021). Still, in women who have already experienced pre-eclampsia, it is recommended to stabilize the BMI at around 18.5–25 before the subsequent pregnancy (NICE Guideline, 2019). This follows research (Takaoka et al., 2016) which states BMI before Pregnancy ≥ 25 is at risk of 3.3 times experiencing postpartum hypertension. This study showed that most mothers had given birth more than once and less than six times (multipara), with a percentage distribution

of 57.1 % in intervention groups I and II and 42.9 % in the control group. High parity can cause health problems for both the mother and the baby (Safita & Nur, 2020).

Anxiety in puerperal mothers can affect their quality of life in the puerperium and their adaptation to becoming a mother. The results showed that all puerperal mothers experienced anxiety symptoms with a mean of 87.50 in intervention group I, 98.43 in intervention group II, and 93.14 in control groups. Research Shay et al., (2020) states that 40% of pregnant women who experience anxiety or depression are at risk of experiencing HDK, and 30% experience it early in pregnancy.

The method of delivery that the mother goes through can indirectly affect the mother's emotions and trigger the occurrence of high blood pressure. The type of delivery experienced by puerperal mothers in this study varied. In intervention group I, as much as 50% of maternity mothers' pervaginam and SC. Intervention group II was dominated by pervaginal delivery with 71.4%, and the control group of 64.3% gave birth in SC. SC delivery was 6.9 times at risk of postpartum hypertension (Takaoka et al., 2016). In addition, mothers with HDK showed an SC surgery rate of 45.4 compared to women without HDK of 31.4% (Corrigan et al., 2021).

The results showed that almost all mothers had experienced HDK before, with a distribution in intervention group I of 64.3%, intervention II of 42.9%, and control of 71.4%. These results follow the study that pre-eclampsia is an independent predictor of hypertension in the puerperium. Research shows a history of hypertension before pregnancy is 19.382 times the risk and 3.12 times the risk of settling in the puerperium period. The experience of hypertension experienced in previous pregnancies can be repeated in future pregnancies and settle in the puerperium.

The characteristics of the family history of hypertension in this study varied. In intervention group I, 71.4% had no record, in intervention group II, 71.4% had an account; in the control group, 50% had a history. This follows research (Machano & Joho, 2020) which states a family history of hypertension is 6.13 times greater than experiencing postpartum hypertension.

In 25% of healthy postpartum mothers, physiologically there is a decrease in left ventricular systolic function, indicating impaired heart function. Placental hypoxia is thought to lead to activation of maternal vascular endothelium, stimulation of endothelin and superoxide production, increased vascular sensitivity to angiotensin II, and decreased formation of vasodilators such as nitric oxide. These endothelial abnormalities can cause vasoconstriction throughout the body, including the kidneys, playing an important role in the long-term regulation of arterial pressure.

The mean pretest and posttest systolic blood pressure in the intervention group I was 151.14 mmHg and 129.07 mmHg, with a mean decrease of 22.071 mmHg. With this decrease, it can be concluded that 501.3 mg of chayote juice can be given to respondents with an increase in systolic blood pressure <150 mmHg so that the administration of this juice can be optimal and reduce systolic blood pressure to normal. Different things happened in intervention group II, with a decrease of 32.5 mmHg and a mean value of pretest and post-test systolic blood pressure of 158.79 mmHg and 126.29 mmHg. From these results, it can be assumed that the optimal decrease in diastolic blood pressure can be achieved by giving 584.85 mg of chayote juice to the group of mothers with diastolic blood pressure <160 mmHg.

The results of statistical tests showed a decrease in systolic blood pressure on 5 consecutive days in the three study groups and obtained $p = 0.000$. This value showed a significant difference in the mean systolic blood pressure in each measurement. The

results of this study are almost equivalent to research regarding the consumption of beetroot and starfruit juice with a 3:7 formulation so that the juice in a 200 ml preparation can reduce systolic blood pressure by an average of 20.46 mmHg.

Siamese pumpkin contains potassium 167,1 mg Kementerian Kesehatan Republik Indonesia, (2021) and flavonoids that play a role in managing hypertension. The results of the concentration analysis showed the presence of potassium content in young and old Siamese pumpkins in both the flesh and seeds (Lage et al., 2019). This study's consumption of Siamese pumpkin juice increased the concentration of Siamese pumpkin.

Decreasing blood pressure due to potassium intake will be more pronounced in individuals with high salt intake (Palmer & Clegg, 2020). At the same time, flavonoids contain high antioxidants that play a role in endothelial function Clark et al., (2015), inhibit ACE, provide diuretic effects Nadila, (2014), activation of EDRF, and inhibit angiotensin I to II (Mutmainah & Estiasih, 2016; Wang et al., 2021). However, continuous monitoring and treatment of blood pressure needs to be carried out in the postpartum period to minimize the constant increase in blood pressure, especially in mothers diagnosed with pre-eclampsia.

The results of statistical tests showed a decrease in diastolic blood pressure on 5 consecutive days in the three study groups and obtained $p = 0.000$. This value indicates a significant difference in each measurement's mean diastolic blood pressure. The mean pretest and posttest diastolic blood pressure in the intervention group I was 97.79 mmHg and 82.43 mmHg, with a mean decrease of 14.071 mmHg. With this decrease, it can be concluded that 501.3 mg of chayote juice can be given to respondents with an increase in diastolic blood pressure <100 mmHg so that the administration of this juice can be optimal and reduce diastolic blood pressure to normal.

Different things happened in intervention group II, with a decrease of 16,143 mmHg and a mean value of pretest and post-test diastolic blood pressure of 93.83 mmHg and 90.93 mmHg. From these results, it can be assumed that the optimal decrease in diastolic blood pressure can be achieved by giving 584.85 mg of chayote juice to the group of mothers with diastolic blood pressure <100 mmHg. RSUD dr. Soedarso Pontianak used a combination therapy of nifedipine and methyldopa.

All respondents to this study were given antihypertensive therapy with nifedipine 10 mg and methyldopa 500 mg, as many as 42.32% of patients with severe pre-eclampsia. These data showed a decrease in systolic and diastolic blood pressure by 29.64 and 19.8 mmHg (Nurmainah et al., 2021). Despite this, the use of antihypertensive drugs during the puerperium should be a consideration concerning the breastfeeding process and the psychological adaptation of the mother. Methyldopa should be used cautiously in women at risk of postpartum depression Ministry of Health (MOH), (2018).

This study's results align with the study (Apriani et al., 2020). Giving Siamese pumpkin extract 400 mg containing 715,033 mg of flavonoids and 2.678% potassium can help reduce the systolic and diastolic blood pressure of *postpartum* hypertensive mothers by controlling the intake of potassium, sodium, and stress with $p = 0.010$. According to one study, the lactation process is associated with lower blood pressure in postpartum hypertensive mothers who are overweight. However, more research is needed to investigate the relationship between lactation and blood pressure.

The use of antihypertensive drugs during the puerperium should be a consideration related to the breastfeeding process. In addition, removing the placenta

can help lower blood pressure, considering the immunological theory that the mother experiences anti-body blocking of the placenta during the first pregnancy, causing pre-eclampsia (Arikah et al., 2020). The mechanism of hypertension is closely related to the functioning of a person's kidneys.

According to Unverdi S et al. (Gupta et al., 2019), postpartum hypertension should be evaluated concerning sustained proteinuria, persistent hematuria, or impaired renal function. A percutaneous kidney biopsy should be performed on women with positive signs of kidney disease. The study results of Cote AM et al. (POGI, 2016) stated that examining the ratio of proteins compared to creatinine can predict proteinuria well.

CONCLUSION

Formula siamese pumpkin juice 584,85 mg effective decreased blood pressure in postpartum hypertension. The concentration of Siamese pumpkin juice in this study was not carried out by organoleptic and chemical product tests. The nutritional intake of the respondents could not be controlled.

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