

## The Effect of Semangat Juice (Watermelon Tomato) on Elderly Hypertension During The Covid-19

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### ABSTRACT

**Background.** Many sufferers do not know if they have hypertension because they are often without complaints, so this disease is called the silent killer. However, hypertension is essential in therapy because it can cause complications in vital organs. Prevention and treatment of hypertension recommend lifestyle modifications such as increasing the intake of vegetables and fruit. Watermelon and tomatoes are fruits that are often found in NTB Province. The fruit can be used as an alternative prevention and treatment of hypertension.

**Research Methods.** This research is a quasi-experimental type of research. The sample came from the UPTD Puskesmas Babakan, Mataram City, West Nusa Tenggara. The juice intervention was given for ten consecutive days, once per day, in the afternoon, as much as 200 ml from 200 g watermelon and 100 g tomatoes. The results were analyzed using paired t-test.

**Research Result.** In the treatment group, the decrease in systolic blood pressure was 18.3 mmHg, and the reduction in diastolic was 11.4 mmHg. While the difference in the decline in the control group for systolic was 4.75 mmHg, and the diastolic level in the control group had an increase of 5.4 mmHg.

**Conclusion.** There is an effect of decreasing systolic and diastolic blood pressure after being given the spirit juice (watermelon) intervention.

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### INTRODUCTION

Hypertension is often found in primary medical practice because of a chronic increase in blood pressure due to increased heart work in pumping blood. The amount of pressure on the walls of blood vessels during contraction is called systolic blood pressure, and the pressure of blood on the walls of blood vessels when relaxed between the two initial heart pressures is diastolic blood pressure (DeBeasi LC, 2006). The number of people with hypertension worldwide will continue to increase, and the results of primary health research in 2018, the prevalence of hypertension will increase to 34.1% (Health RI, 2018). Hypertension is closely related to daily lifestyle. One of the recommendations for hypertensive patients is to increase the intake of fruits and vegetables (James, 2014). The criteria for the diagnosis of hypertension were previously defined as systolic blood pressure = 140 mmHg and diastolic blood pressure = 90 mmHg (Mills, 2018).

Referring to the latest guidelines, hypertension results from a systolic blood pressure measurement of  $\geq 130$  mmHg or a diastolic blood pressure of  $\geq 80$  mmHg (AHA, 2017). Symptoms include easy temper, ringing in the ears, heavy neck, headache, dizziness, fatigue, and heart palpitations (Couch dan Debra, 2008).

Fruits are a source of various vitamins, minerals, and dietary fiber (Association of Indonesian Nutritionists ASDI, 2019).

Watermelon is the most commonly seen and found along Jalan Central Lombok. Freshly harvested fruit from the field and tomatoes are also found on the island of Lombok, which can be used as an alternative to decreasing blood pressure in hypertensive patients, as well as to increase the body's immune system. The results of this study as an alternative prevention or treatment of hypertension in the hope of improving the condition of the elderly to reduce the incidence of hypertension. The urgency of this research is the prevention of hypertension during the COVID-19 pandemic and as an alternative to non-pharmacological hypertension treatment related to maintaining normal blood pressure and increasing body immunity by consuming Semangat Juice.

## RESEARCH METHODS

The research was conducted after obtaining ethical clearance from the Health Research Ethics Commission of Mataram Health Polytechnic with letter number LB.01.03./6/2682/2022. This research also obtained permission from the Research and Development Agency of the Government of Mataram City with the research permit number 070/156/Balitbang-Kt/III/2022, which was copied to the Head of UPTD of the Babakan Health Center in Mataram City. After taking care of the research permit, the research team screened the elderly who suffered from hypertension. Then they were divided into two groups: the intervention group and the control group. The juice intervention was given for ten consecutive days, once per day, in the afternoon, as much as 200 ml from 200 g watermelon and 100 g tomatoes—data analysis using paired t-test.

## RESULTS AND DISCUSSION

### Characteristics of Respondents

The results of anthropometric measurements of two groups, namely the control group and the treatment group, and the description of the characteristics of the research respondents are presented in table 1.

**Table 1. Characteristics of Respondents**

Characteristics	Control		Treatment	
	n	%	n	%
<b>Age (years)</b>				
45-55	3	15	3	15
56-65	10	50	11	55
>65	7	35	6	30
<b>Total</b>	20	100	20	100
<b>Gender</b>				
Male	3	15	2	10
Female	17	85	18	90
<b>Total</b>	20	100	20	100
<b>Nutritional Status</b>				
Underweight	2	10	1	5
Normal	12	60	10	50
Overweight	6	30	7	35
Obesity	0	0	2	10
<b>Total</b>	20	100	20	100

The age of the respondents for the treatment group and the control group was not much different, and the age range was the most 56-65 years, with a percentage of 50% for the control group and 55% for the treatment group. Most of the sex between the two groups was dominated by women. Nutritional status of 60% average for the control group and 50% normal nutritional status for the treatment group.

## Blood Pressure Levels

**Table 2. Blood pressure levels (Systolic – Diastolic)**

Groups	Mean	SD	Δ	p
Control				
Sys before	155,95		4,75	
Sys after	151,2	19.35		0,000
Dias before	95,15	23.97	-5,4	
Dias after	100,55	10.76		0,590
		22.74		
Treatment				
Systolic before	165,3	14.49	18,3	
Systolic after	147	18.31		0,027
Diastolic before	96,8	12.93	11,4	
Diastolic after	85,4	13.29		0,000

After being given the Semangat Juice intervention for ten consecutive days, the difference in systolic blood pressure reduction in the treatment group was 18.3 mmHg, and diastolic decreased by 11.4 mmHg. While the difference in the decrease in the control group for systolic was 4.75 mmHg, and the diastolic level in the control group had an increase of 5.4 mmHg. Data analysis using the paired t-test for systolic levels before and after the intervention had a significant effect with a p-value of 0.027. Diastolic levels also had a significant effect, with a p-value of 0.000. Data analysis in the control group also affected systolic levels with p 0,000 but did not affect diastolic levels with p 0.590.

Potassium functions as a natriuretic and diuretic due to the high water content in mangoes which can cause an increase in sodium and fluid expenditure by bringing the body's metabolic products so that sodium can be excreted through the urine (Manurung, WP, 2016). This study's results align with other studies, which showed a decrease in systolic and diastolic blood pressure by 17 mmHg and 13.2 mmHg after consuming 250 g of watermelon for four days (Manno, FA2016). In addition, the study's results stated that L-citrulline or L-arginine contained in watermelon can lower blood pressure (Novianti, 2015).

### CONCLUSIONS

There is an effect of decreasing systolic and diastolic blood pressure after receiving the intervention of Semangat Juice (watermelon and tomatoes).

### SUGGESTIONS

Future studies are expected to be equipped with dietary compliance management for hypertension.

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### REFERENCES

- American Heart Association (AHA). 2017. The 2017 Guideline for prevention, detection, evaluation, and management of high blood pressure in adults. Texas: American Heart Association, pp 1–20.
- Couch, S.C. dan Debra, A.K. 2008. Medical Nutrition Therapy for Hypertension. Krause's food & Nutrition therapy. 12th ed. St. Louis Missouri: Saunders Elsevier, pp. 865-877
- DeBeasi LC. 2006. Fisiologi Sistem Kardiovaskuler Edisi 6. Jakarta: Penerbit EGC, hal 530-546.
- James, P.A., Oparil, S., Carter, B.L., Cushman, W.C, Dennison-Himmelfarb, C, Handler. 2014. Evidence-based guideline for the management of high blood pressure in Adults. JAMA. 311 (5): 507-520
- Kemenkes RI. 2018. Riset Kesehatan Dasar 2018, Jakarta: Badan Penelitian dan Pengembangan Kesehatan Kementerian Kesehatan Republik Indonesia.

Manurung, W. P., & Wibowo, A. 2016. Pengaruh Konsumsi Semangka (*Citrullus vulgaris*) untuk Menurunkan Tekanan Darah pada Penderita Hipertensi, *Majority*, Volume 5 nomor tahun 2016, Lampung. Hal.105.

Manno, F. A., Soputri, N., & Simbolon, I. 2016. Efektivitas Buah Semangka Merah (*Citrullus Vulgaris* Schrad) Terhadap Tekanan Darah, *Jurnal Skolastik Keperawatan*, Volume 2 nomor 2 tahun 2016, Bandung. Hal.184.

Mills KT et al. (2016). Global Disparities of Hypertension Prevalence and Control: A Systematic Analysis of Population-Based Studies From 90 Countries. *Circulation* 134, 441–450

Novianti. 2015. Kenali dan cegah Obati hipertensi. notebook: Yogyakarta.

Pudjiastuti, R.D.2013. Penyakit-penyakit mematikan. Yogyakarta : Nuha Medika.

Persatuan Ahli Gizi Indonesia ASDI. 2019. Penuntun Diet dan Terapi Gizi. Edisi Ke-4. Jakarta Penerbit Buku Kedokteran EGC.

Stanaway JD et al.2018. Global, regional, and national comparative risk assessment of 84 behavioral, environmental, occupational, and metabolic risks or clusters of risks for 195 countries and territories, 1990–2017: A systematic analysis for the Global Burden of Disease Stu. *Lancet* 392, 1923–1994.