



Original Research

Cucumber and honey soaking reduces hypertension in the elderly

Edy Soesanto¹, Salsabella Zulino¹

¹ Universitas Muhammadiyah Semarang, Indonesia

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Abstract

Hypertension is a condition of increasing a person's blood pressure beyond normal limits, causing increased morbidity and mortality. Hypertension can be reduced by consuming cucumber which contains potassium which inhibits the release of renin so that there is an increase in sodium and water excretion. In addition, it can also be reduced by consuming honey which can prevent the formation of plaque attached to the walls of blood vessels so that it can eliminate bad cholesterol for the body. This study aimed to determine the effect of giving cucumber and honey water immersion on Elderly Hypertension. This study used a Quasy Experimental design with a Pretest and Posttest with Control Group design. Sampling using a simple random sampling technique. The sample in this study amounted to 30 elderly people using the paired sample t-test statistical test. The results showed that the average blood pressure of the intervention group before being given the cucumber and honey water immersion was 153.6/84 mmHg and after it was 148.3/82.1 mmHg. The average blood pressure of the control group before being given the cucumber and honey water immersion was 158.5/80.2 mmHg and after it was 163.5/80.2 mmHg with $p = 0.000$. In the results of the independent sample test the intervention group before being given therapy, namely Sig. (2-tailed) = 0.027, the control group before treatment was Sig. (2-tailed) = 0.045. While the test results of the intervention group after being given therapy are Sig. (2-tailed) = 0.124, the control group after being given therapy is Sig. (2-tailed) = 0.139. There is an effect of giving cucumber and honey water immersion therapy on changes in blood pressure in the elderly with hypertension. But there is no difference in the average blood pressure of the Hypertensive Elderly. It is expected that the elderly with hypertension can make cucumber and honey water immersion as an alternative therapy to reduce hypertension.

INTRODUCTION

Hypertension is a disease related to the cardiovascular system where this disease is one of the health problems in the world which is considered quite dangerous because its work is very progressive.¹ Hypertension is a condition of increasing a person's blood pressure exceeding normal

limits, causing increased morbidity and mortality.²

Based on the 2018 Riskesdas data, the prevalence of hypertension with a population aged 18 years is 34.1%, South Kalimantan is the province with the highest incidence rate with a percentage (44.1%), and Papua occupies the lowest position in

Corresponding author:

Edy Soesanto

edysoes@unimus.ac.id

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the incidence of hypertension with a percentage (22.2%). At the age of 31-44 years hypertension attacks with a percentage (31.6%), age 45-54 years (45.3%), and age 55-64 years (55.2%). The number of incidences of hypertension in the elderly is still quite high, with 60-80% aged over 65 years. Hypertension occurs mostly in the elderly or at the age of over 75 years with a percentage (69.5%) and on average it affects women with a percentage (36.9%) compared to men (31.3%).³

Based on the results of blood pressure measurements on a number of residents in Central Java in 2017, there were 8,888,585 residents (36.53%) aged 18 years and over who were at risk, there were 1,153,371 residents (12.98%) who suffered from hypertension. Demak Regency is in the second highest order with the number of hypertension sufferers as much as 76.7%.⁴ The prevalence of elderly hypertension sufferers at the Mranggen 1 Health Center, Demak Regency in 2018 was 3,295 which increased by 1%.⁵

The cause of high blood pressure is not known with certainty, but a person's lifestyle becomes a big enough influence in this disease. There are many things that cause hypertension, including age, gender, smoking behavior, lifestyle and lack of exercise, resulting in obesity if it cannot be controlled properly. By reducing the presence of these risk factors, it becomes the basis for health workers to provide further interventions.⁶

One way that can be done to make lifestyle modifications in patients with hypertension is to adjust the diet. Blood pressure can be controlled and lowered by consuming one of the vegetables, namely cucumber.⁷ Based on a report from the United State Department of Agriculture (USDA) Branded Food Products Database, every 100 grams of cucumber contains 147 mg of potassium and certainly does not contain sodium, and there are many other nutritional content in cucumbers.

The potassium content in cucumbers can reduce systolic and diastolic blood pressure, the direction of the correlation is negative, so the higher the potassium content consumed, the more effective it is in lowering blood pressure in hypertensive patients.⁸ The absence of sodium content also further clarifies the benefits of the cucumber itself.

One of the processed cucumbers that can lower blood pressure in most of the elderly is cucumber cut into pieces and then soaked in water for 12 hours. The results of this cucumber water immersion contain antioxidants by compounds that are bioactive, which can be maximally released and mixed with water due to the oxidation process by oxygen. Cucumbers in this study were not crushed but only cut into pieces. This will allow the cucumber to release all the many antioxidants and can be directly mixed with water.⁹

Besides cucumber, hypertension can also be overcome by consuming honey.¹⁰ Said that honey contains sugar, enzymes, protein, minerals, vitamins, and flavonoids derived from flower nectar which is processed naturally by bees into a sweet thick liquid. Honey can lower bad blood pressure called LDL (Low Density Lipoprotein) which at the same time can also increase levels of good cholesterol called HDL, preventing the formation of plaque attached to the walls of blood vessels so that it can remove cholesterol. There was a significant effect of giving oral honey therapy on respondents before and after being given treatment.¹¹

METHODS

This study used a *Quasy Experimental design with a Pretest and Posttest with Control Group design*. The population in this study were all elderly with hypertension in Kangkung village, Mranggen, Demak which amounted to 127 people. The sampling method used in this study was *simple random sampling* with a sample size of 30 respondents with Inclusion Criteria: Willing

to be a respondent and follow the research procedure until the final stage, Elderly Hypertension is female, has suffered from hypertension for more than 6 months, aged above 60 years old, taking medication regularly, consuming cucumber and honey water bath in the morning 30 minutes after taking standard medication. The research was conducted in Kangkung Village Mranggen, Demak. The research process took place from March 4-10, 2021. Data were analyzed univariately and bivariately (Paired Sample T-Test).

RESULTS

Based on figure 1 after the paired sample t-test test the average blood pressure of the intervention group before and after being

given cucumber and honey water immersion was 153.6/84 mmHg and after was 148.3/82.1 mmHg. From the paired table, it can be seen that the t value is 20,124 and $p = 0.000$ ($p < 0.05$), it can be concluded that there is a difference before and after being soaked in cucumber and honey water.

Based on figure 2 after the paired sample t-test test the average blood pressure of the control group before and after being given cucumber and honey water immersion was 158.5/80.2 mmHg and after was 163, 5/80.2 mm Hg. From the paired table, it can be seen that the t value is 39,840 and $p = 0.000$ ($p < 0.05$), it can be concluded that there is a difference before and after being soaked in cucumber and honey water.

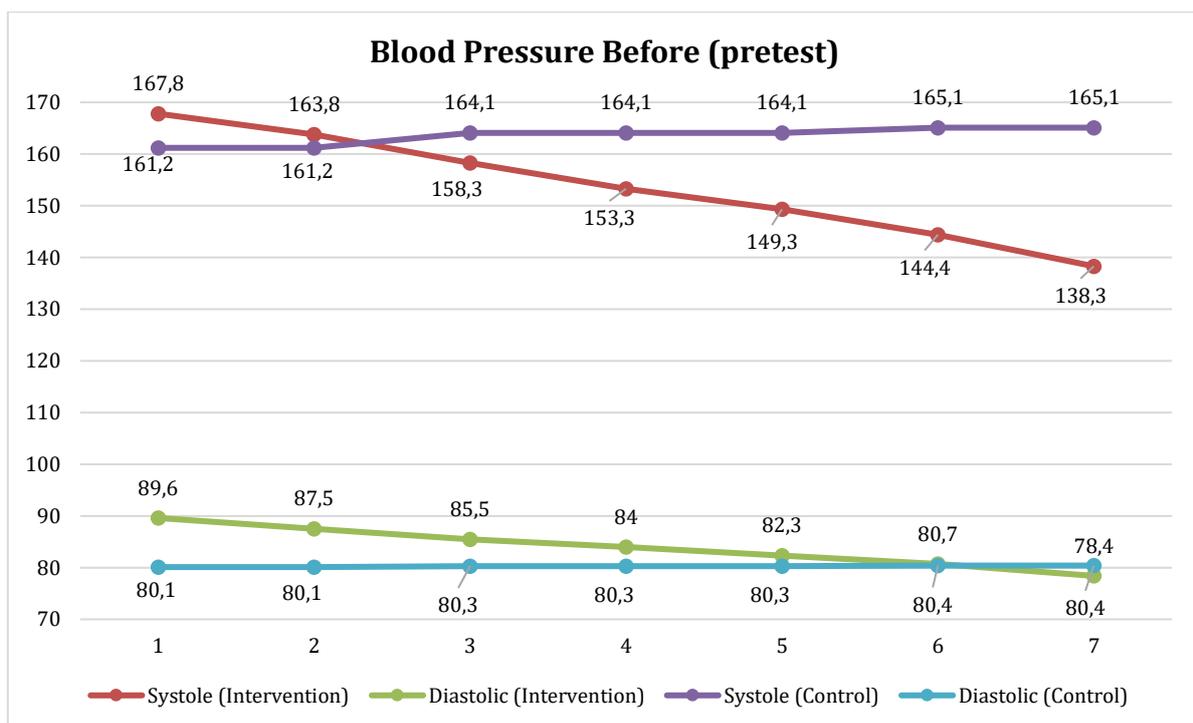


Figure 1
Distribution of the average value of systolic and diastolic blood pressure in the intervention and control groups before giving cucumber and honey water immersion

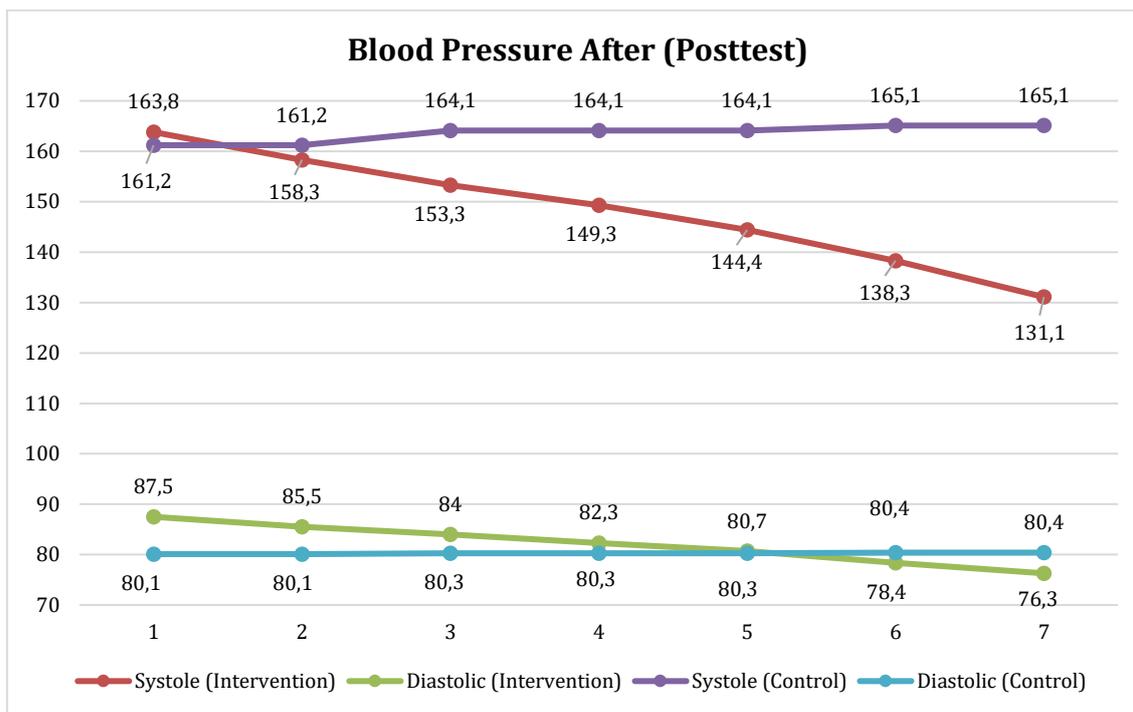


Figure 2
Distribution of the average value of systolic and diastolic blood pressure in the intervention and control groups after administration of cucumber and honey water immersion

DISCUSSION

Blood Pressure Before Cucumber and Honey

Based on these results, it was found that on average the respondents in this study did not pay attention to their daily lifestyle, because for them eating modestly was enough. Some of them said that they did not have enough money if they had to occasionally buy meat, fish, or fruit. In addition, it has also become a culture or habit of consuming salted fish. In fact, to be able to control their blood pressure, they can get it through green vegetables which are quite economical and easy to obtain because these green vegetables contain potassium and magnesium. Another thing that the elderly can do is to do light exercise, drink enough water according to their activities.

The elderly who experience hypertension increase because these respondents cannot

manage their lifestyle well, unhealthy and nutritious eating habits where they rarely consume fruits, rarely consume vegetables and often consume fried foods. Meanwhile, the increase in blood pressure caused by food, namely consuming foods with a high content of saturated fat, over time causes the formation of plaque or cholesterol which can inhibit blood circulation, which is where the blood vessels narrow and the elasticity of the blood vessels decreases.¹²

Blood Pressure After Cucumber and Honey Soaking

Cucumber has good health benefits, namely it can help maintain salt and fluid balance, control blood pressure stability, help reduce hypertension. The benefits of other cucumbers are as the best diuresis, namely as a urine launcher (Nugraheni, 2016). Cucumber water bath and honey contain potassium which has benefits in cleaning carbon dioxide in the blood, which can regulate osmotic pressure along with

sodium, triggering the work of muscles and nerve nodes. The mineral content of magnesium and riboflavin also has a role in lowering blood pressure. The mineral magnesium helps in making blood flow smooth. Other ingredients are riboflavin, a *vasodilator*, and high in vitamin C. This content has a role as a diuretic, so it can help lower blood pressure. While in honey itself contains flavonoids.

Giving cucumber and honey water immersion can lower blood pressure caused by vasodilation of blood vessels which can lower blood pressure. This cucumber can be used as a type of complementary medicine or non-pharmacological therapy that can overcome hypertension. This agrees with research (Kusumastuty et al., 2017) who said that after giving *infused water* cucumber, the respondent's blood pressure decreased.

The Effect of Cucumber and Honey Bathing on Reduction in Elderly Hypertension

In the results of the independent sample test the intervention group before being given therapy, namely Sig. (2-tailed) = 0.027, the control group before treatment was Sig. (2-tailed) = 0.045 so that there is a difference in the average blood pressure of the Hypertensive Elderly. While the test results of the intervention group after being given therapy are Sig. (2-tailed) = 0.124, the control group after being given therapy is Sig. (2-tailed) = 0.139 so it can be concluded that there is no difference in the average blood pressure of the Hypertensive Elderly in the Kangkung Mranggen Village area, Demak.

In the other study produced a statistical test, namely there was a difference after giving the honey solution intervention to decrease blood pressure with $p < 0.05$. Which means that the intervention of cucumber and honey water immersion weighing 20 grams can help reduce blood pressure in the treatment group. In

addition, the decrease in blood pressure in the elderly is also due to the vitamin C content in honey.¹³ The honey in this study was dissolved at normal temperatures. Cucumbers contain high potassium so they are very good for consumption by people with hypertension, because in their research results, cucumbers are significantly related to a decrease in systolic blood pressure, because there is a potassium content in cucumber which is 1,000 mg/day.¹⁴

Based on this description, the researcher argues that there is an effect on the blood pressure of the elderly before and after being given cucumber and honey water immersion. This study shows that cucumber and honey water immersion has an effect on reducing hypertension in the elderly so that this intervention can be applied in Kangkung Village Mranggen, Demak. Although the statistical difference test showed that there was no significant difference in blood pressure results, it was possible to continue the therapy of giving cucumber water and honey immersion in this hypertension patient.

CONCLUSION

The respondent's blood pressure before being given cucumber and honey water immersion in the intervention group was 153.6/84 mmHg and the control group was 163.5/80.2. The respondent's blood pressure after being given cucumber and honey water immersion in the intervention group was 148.3/82.1 mmHg and the control group was 163.5/80.2. There is an effect of giving cucumber and honey water immersion on reducing hypertension with a t value of 29,982 and $p = 0.000$ ($p < 0.05$) in the Hypertensive Elderly in Kangkung Village Mranggen, Demak, but there is no difference in the average blood pressure of the Hypertensive Elderly after being given the immersion. cucumber water and honey with Sig. (2-tailed) = 0.132. This research is expected to be a source of literature for further researchers to deepen

complementary treatments, especially the use of Indonesian herbal ingredients to reduce blood pressure of people with hypertension

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CONFLICTS OF INTEREST

Neither of the authors has any conflicts of interest that would bias the findings presented here.

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