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Research Article

Effect of Aloe Vera Drink with Cinnamon on Blood Sugar Reduction in Families with Type II Diabetes Mellitus in East Jakarta

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Abstract

Introduction: Diabetes Mellitus is a disease caused by an increase in blood sugar (glucose) levels. Increased glucose in the blood can occur because the hormone insulin does not succeed in bringing our glucose into the body's cells. The incidence of diabetes in the world shows an increasing prevalence every year. Uncontrolled diabetes can cause disorders of the nerves, kidneys, eyes, and heart blood vessels. To control blood sugar, you can use natural remedies, namely aloe vera and cinnamon which have hypoglycemic properties.
Objective: This study was to determine whether aloe vera drink with cinnamon has an effect on lowering blood sugar.
Methods: This research method uses a quasi-experimental design with a nonequivalent control group design. The experimental group was given treatment while the control group was given a placebo treatment. In the treatment and control groups, it begins with a pre-test/blood sugar measurement, after giving the treatment a post-test/blood sugar measurement is conducted.
Results: The average blood sugar of respondents after consuming cinnamon water was 136 mg/dl while the average blood sugar of respondents after consuming aloe vera cinnamon water was 111 mg/dl. This shows that more respondents had a significant drop in blood sugar after consuming aloe vera cinnamon water.
Conclusion: Consumption of aloe vera and cinnamon drinks can reduce blood sugar in patients with type II diabetes mellitus.

Keywords: diabetes mellitus, blood sugar, aloe vera, cinnamon.

Introduction

Diabetes is a chronic disease characterized by elevated blood glucose or blood sugar levels. An increase in blood sugar that lasts a long time can cause complications in the nerves, kidneys, eyes, blood vessels, and heart. Adults are at high risk for type II diabetes mellitus because the body becomes resistant to insulin or does not produce enough insulin.[1,2] The prevalence of type 2 diabetes has increased significantly in countries of all income levels in the last 30 years. 1 in 11 people in the world suffer from this disease, about 422 million people, most of whom live in low and middle-income countries. In Indonesia, DKI Jakarta Province is the highest number of people suffering from diabetes around 250 thousand inhabitants. Every year about 1.6 million cases of death are related to diabetes. The death rate due to diabetes in Indonesia is 99,400 people, while the death rate due to an increase in blood glucose is 157,500 people.[1,3]

The problem is that people with diabetes have hope of getting affordable treatment, including insulin. By 2025, the target is to increase the increase in diabetes globally. To achieve this target, it can be supported by offering aloe vera and cinnamon drinks to help lower blood sugar.[3] Aloe vera as an antihyperglycemic can lower blood sugar because it contains chromium and aloe emodin, aloe vera can protect and restore function.damaged pancreatic cells. Then the Aloe vera content can work like insulin and lower blood glucose levels even though all pancreatic cells have degenerated.[4,5] Cinnamon (Cinnamomum verum) has the bioactive component of cinnamaldehyde as an antioxidant and increases glucose transport by GLUT 4 in fat and muscle cells so that it can lower blood sugar, flavonoids which are antioxidants and can optimize the work of the pancreas, other components found in cinnamon are cinnamon. and polyphenols.[6,7,8] The specific purpose of this study was to identify a decrease in blood sugar before and after after giving aloe vera drink with cinnamon. The urgency of this research is because Researchers are interested in doing research on the combination of aloe vera and cinnamon because there are still many different research results if it is only aloe vera or cinnamon.

Methods

This research method uses a quasi-experimental design with a nonequivalent control group design. The experimental group was given treatment while the control group was given a placebo treatment. In the treatment and control groups, it begins with a pre-test/blood sugar measurement, after giving the treatment a post-test/blood sugar measurement.[7] The intervention given was a combination drink of aloe vera and cinnamon. Weigh the cinnamon as much as 10 grams, then put it in a cooking pot plus 100 water, heat it for 5 minutes in a boiling state (low heat), turn off the heat then strain, transfer to a glass. Once warm, add 0.8gr/KgBB aloe vera.[9]

Previous research showed that there was an effect of giving aloe vera on reducing blood sugar 0.001[10] 0.016[4] and there is one study result that aloe vera is not significant in reducing blood sugar.[11] Sampling was done by non-probability sampling, namely purposive sampling with the inclusion criteria of 60 people, which were divided into 2 groups, namely the cinnamon drink intervention group and 1 aloe vera cinnamon intervention group with inclusion criteria being in the adult and elderly age groups.[12] The independent variables in this study were aloe vera and cinnamon drinks, with a dose of aloe vera that was 0.8gr/KgBB.[9] The dose of cinnamon to lower blood sugar was 10gr/100cc of water for one drink.[13]

The intervention given was a combination drink of aloe vera and cinnamon. Weigh the cinnamon as much as 10 grams, then put it in a cooking pot plus 100 water, heat it for 5 minutes in a boiling state (low heat), turn off the heat then strain, transfer to a glass. Once warm, add 0.8gr/KgBB aloe vera.[9] The steps taken were measuring the respondent's blood sugar in the morning, then providing an intervention with aloe vera drink with

cinnamon, in the afternoon the blood sugar was measured again.[8,14]

Univariate analysis by describing the characteristics of respondents based on age and gender. Bivariate analysis is an analysis that is carried out on two variables that are suspected to have a relationship.[12] Based on the results of normality testing using Kolmogorov Smirnov on the data before being given cinnamon treatment, the p-value 0.311> 0.05, which means the data is normally distributed. The results of normality testing using Kolmogorov Smirnov on the data before being given aloe vera cinnamon treatment obtained p-value 0.744 > 0.05, which means the data is normally distributed. The normality test was also carried out on the data after being given treatment. Based on the test results, the p-value for the variance similarity test was 0.433 > 0.05, which means that the variants of the cinnamon water group and aloe vera cinnamon water group were assumed to be the same. Furthermore, the results of the independent t-test obtained a p-value of 0.006 < 0.05, which means that there is a difference in the average blood sugar of the cinnamon water group and the aloe vera cinnamon water group. and test dependent sample t-test using SPSS 2.1 software. Pengaruh Pemberian Jus Lidah Buaya Terhadap Penurunan Kadar Gula Darah Pada Penderita Diabetes Mellitus

Results

The results of research on the influence of aloe vera drinks with cinnamon on blood sugar reduction in families with type II diabetes mellitus are illustrated in the following table:

Table 1. Respondent Demographic Data by Age and Gender

Characteristic		N	Percentage
Age	Adult	24	80%
	Elderly	6	20%
Gender	Man	9	30%
	Woman	21	70%

Table 1 describes adult respondents as more dominant as much as 24 (80%) and the majority of respondents are female as much as 21 (70%). Based on the results of statistical analysis of the *T Paired* Test on the influence before and after the administration of cinnamon drink water on blood sugar reduction obtained as follows:

Table 2. Effect of Cinnamon Water and Cinnamon water with Aloe vera toward Blood Glucose

Variable		Mean	SD	p-value
Cinnamon water	Pre-Post	107.06	62.61	0.000
Cinnamon water and Aloe vera	Pre-Post	153.01	40.03	0.000

Table 2 illustrates that there are differences before and after the cinnamon water drink intervention to reduce blood sugar in clients with Diabetes Mellitus (ρ 0.00 <0.05). The mean is positive (107) there is a tendency to decrease blood sugar after drinking cinnamon water stew on average 107 mg/dl. Table 2 also illustrates that there are differences before and after the intervention of cinnamon water drink with aloe vera to reduce blood sugar in clients with Diabetes Mellitus (ρ 0.00 <0.05). The mean is positive (153) there is a tendency to decrease blood sugar after drinking cinnamon water boiled with aloe vera, the average decrease is 153 mg/dl.

Discussion

Diabetes mellitus (DM) type II is a hyperglycemic condition that occurs due to excessive consumption of carbohydrates so that the body is at risk of absorbing a lot of glucose. Absorption of glucose becomes increasingly difficult if there is damage to the pancreas organ that produces the hormone insulin. Excess blood sugar that lasts a long time can cause problems with the kidneys, eyes and nerves. The emergence of disorders that occur in the body can be controlled by diet, exercise, health education, and consumption of hypoglycemic drugs. Natural hypoglycemic drugs from plants can be the main choice because chemical drugs have adverse side effects. [14,15]

Drinking cinnamon stew on a regular basis can reduce blood sugar in clients with diabetes mellitus, the results of this study are the same as other studies which significantly reduce blood sugar after receiving cinnamon stew drink =0.005 < 0.05.[6,7,8,13] Cinnamon (Cinnamomum verum) has a bioactive component of cinnamaldehyde as an antioxidant and increases glucose transport by GLUT 4 in fat and muscle cells so that it can lower blood sugar, flavonoids which are antioxidants and can optimize the work of the pancreas, other components found in cinnamon are cinnamate and polyphenol.[6,7,8] Another herbal ingredient that can reduce blood sugar levels besides cinnamon is aloe vera. The results of this study are the same as the results of other studies with significant results.[4,5,14] Aloe vera as an antihyperglycemic can lower blood sugar because it contains chromium and aloe emodin, aloe vera can protect and restore the function of damaged pancreatic cells. Then the content of Aloe vera can work like insulin and lower blood glucose levels even though all pancreatic cells have degenerated.[4,5]

Natural remedies that have a hypoglycemic effect are aloe vera and cinnamon (Cinnamomum verum). The active composition of antihyperglycemic in aloe vera are glycoproteins, antioxidants, flavonoids, polysaccharides acemannan and glucomannan, and various vitamins and minerals with a dose of aloe vera that is 0.8gr/KgBB.[9] Previous research showed that there was an effect of aloe vera on reducing blood sugar p= 0.001[10] p= 0.016[13] and there was one study result of aloe vera that was not significant in reducing blood sugar.[11] Cinnamon contains flavonoid compounds that can trigger the release of insulin because it increases the sensitivity of pancreatic -cells so that blood glucose decreases. The dose of cinnamon to lower blood sugar is 10gr/100cc of water for one drink.[13] Previous research showed that there was an effect of giving cinnamon on blood sugar reduction 0.0016 0.0017 and researchers did not find different/contradictory research results.[6,7] Aloe vera and cinnamon drinks can be used as alternative choices by people with type II diabetes mellitus, if consumed regularly in daily life can reduce blood sugar levels, this study is the same as other studies with significant results in reducing blood sugar with p- value 0.000 < 0.05.

Conclusion

Consumption of aloe vera and cinnamon drinks as a health drink with a combination of aloe vera 0.8gr/KgBB and cinnamon used 10 grams/100cc of water can lower blood sugar levels. Families with type II diabetes mellitus can use aloe vera and cinnamon drinks as alternative options to help lower blood sugar levels other than using chemical drugs. Further research can increase the dose and add more days to the intervention.

Conflict of Interest Declaration

This research is free from personal or group conflicts of interest.

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