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Overview of Insulin Leaf Tea Administration on Blood Sugar People in Kemutug Kidul Village

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Abstract

This study was initiated by the high incidence of hyperglycemia and the need for simple, safe, and easily implemented complementary therapies in the community. The aim of this study was to analyze the effectiveness of insulin leaf tea on blood glucose levels in the community in Kemutug Kidul Village. This study used a quasi-experimental design with a one-group pretest-posttest model. The population consisted of 36 diabetes mellitus sufferers, while the sample was selected using purposive sampling of 5 respondents. The research instruments included a glucometer, observation sheets, and intervention guidelines, while the data were analyzed descriptively by comparing pre- and post-intervention values. The results showed that all respondents experienced a decrease in blood glucose levels after consuming insulin leaf tea for 10 days, with an average decrease of 131.2 mg/dl. It was concluded that insulin leaf tea has the potential to be a non-pharmacological complementary therapy in helping control blood glucose, although this finding is still limited by the small sample size and the lack of a control group.

Keywords: Blood Glucose, Complementary Therapy, Diabetes Mellitus, Insulin Leaf Tea, Smallanthus Sonchifolius.

INTRODUCTION

Non-communicable diseases (NCDs) are a group of diseases that are not transmitted between individuals, and generally develop gradually over a long period of time. *World Health Organization*, (2025) Non-communicable diseases (NCDs) are influenced by a combination of genetic, physiological, environmental, and behavioral factors. The four main groups of NCDs include cardiovascular diseases such as heart attacks and strokes, cancer, chronic respiratory diseases such as chronic obstructive pulmonary disease and asthma, and diabetes mellitus.. Based on the reportWorld Health Organization, (2025)It is estimated that nearly three-quarters of the total global deaths due to NCDs, namely around 32 million deaths, occur in various countries around the world.

This phenomenon is also clearly visible, based on PMK 13/2022 concerning the Ministry of Health's Strategic Plan 2020–2024, Indonesia is currently facing an epidemiological transition, where the role of non-communicable diseases in causing death and Disability Adjusted Life Years (DALYs) has increased by up to 82%.(Ministry of Health of the Republic of Indonesia, 2022)One of the non-communicable diseases whose prevalence continues to increase is Diabetes Mellitus, a chronic metabolic disorder with the potential for serious complications if not properly managed.(Friday, Dawn, 2026)

According to the 2025 edition of the IDF Diabetes Atlas, approximately 1 in 10 adults aged 20 to 79 worldwide are estimated to be living with diabetes. This prevalence is equivalent to 11.1% of the adult population, or approximately 589 million individuals, in 2024 and is projected to continue increasing to approximately 853 million people in the future.(IDF, 2025)Meanwhile, the World Health Organization (2024) reported that around 422 million people in the world live with diabetes, with a prevalence of 8.5% in adults.(World Health Organization, 2024).

In line with this global trend,The 2023 Indonesian Health Survey (SKI) indicates that the incidence of diabetes mellitus in Indonesia has increased compared to the previous year, with the proportion of type 2 diabetes mellitus cases having a higher incidence rate than type 1.(SKI, 2023)At the regional level, a similar situation is also seen in Central Java Province. Health service data from 2024 recorded approximately 596,147 people suffering from diabetes mellitus in the region. In

Banyumas Regency alone, there were 22,836 diabetes sufferers, placing Banyumas Regency in eighth place for the highest number of diabetes sufferers in Central Java.(Central Java Health Office, 2025).

Based on data from the Integrated Primary Service Post (ILP) and the Baturraden II Community Health Center's Prolanis program, approximately 2 in 10 residents of Kemutug Kidul Village aged 26 and over have been identified as having diabetes mellitus, with random blood sugar (GDS) results showing values exceeding 359 mg/dL, well above the normal limit. This indicates that this condition remains a health problem that requires serious attention in efforts to control non-communicable diseases (NCDs).

Various studies show that diabetes mellitus is often not detected in the early stages because the sufferer is not aware of the symptoms, so that the diagnosis is only made after complications arise and treatment becomes more complex.(Helmi & Veri, 2024;Khanna et al., 2022). Besides that,Rosyidah and Cahyono (2025)Research states that diabetes mellitus is a chronic metabolic disorder characterized by increased blood glucose levels (hyperglycemia) due to impaired insulin secretion, insulin action, or a combination of both.This condition is related to the role of insulin as a hormone that functions to control glucose levels in the blood and helps the process of glucose metabolism into energy for the body.(Annur, 2023)

Blood glucose regulation in individuals with diabetes mellitus can be achieved using two main methods: drug-based therapy and non-drug therapy. Drug-based therapy involves the use of antidiabetic medications to help lower and control blood sugar levels. However, these medications carry potential side effects such as a sore throat, nasal congestion, stomach upset, and diarrhea.(Agustina et al., 2026)Therefore, non-pharmacological approaches are also an alternative that can support diabetes mellitus control, including lifestyle changes, increased physical activity, stress management, and the use of traditional medicinal plants.

The use of traditional medicinal plants as complementary therapy is increasingly being developed, including in the management of diabetes mellitus based on natural ingredients.(Sulastri et al., 2021)Insulin leaves, scientifically known as Smallanthus sonchifolius, are one of the plants known to have antidiabetic potential. This plant is known to contain various active compounds such as flavonoids, ferulic acid, chlorogenic acid, and caffeine, which have antioxidant activity and the potential to provide hypoglycemic effects.(Yanto & Priskila, 2024). The results of the study bySulastri (2021)shows that insulin leaf tea can contribute to reducing blood glucose levels and has the potential to be used as a supportive therapy for diabetes mellitus sufferers.

Another study also reported that Smallanthus sonchifolius leaf extract has antidiabetic activity through antioxidant and anti-inflammatory mechanisms that have the potential to contribute to lowering blood glucose levels in diabetes mellitus. (Widowati et al., 2023). On the other hand,Pratama et al, (2023)found that Smallanthus sonchifolius leaves have antidiabetic activity based on in silico and in vitro tests, where the natural active substances in the leaves play a role in the enzyme inhibition mechanism related to glucose metabolism which contributes to maintaining stable blood sugar levels.

Although several studies have demonstrated the potential of Smallanthus sonchifolius in lowering blood glucose levels, the use of insulin leaf tea as a simple intervention that can be directly implemented at the community level remains limited. Therefore, this study aimed to evaluate the effect of Smallanthus sonchifolius leaf tea on lowering blood glucose levels in people with diabetes mellitus.

RESEARCH METHODS

This research was conducted in Kemutug Kidul Village, Baturraden District, Banyumas Regency, on October 5–15, 2025, door to door. The study used a quasi-experimental design with a one-group pretest–posttest model. The study population consisted of 36 people with Diabetes Mellitus in Kemutug Kidul Village. The sample was selected using a purposive sampling technique based on inclusion criteria, namely respondents with blood glucose levels above the normal limit, not yet taking antidiabetic medication, having good communication skills, and willing to participate as research subjects. Thus, 5 respondents were obtained as research samples.

The research variables included the dependent variable, blood glucose levels, in individuals with hyperglycemia, and the independent variable, Smallanthus sonchifolius leaf tea. Data collection was conducted by measuring random blood glucose levels (GDS) using a standardized glucometer, then recorded on an observation sheet.

The research phase began with a pretest to determine the respondents' blood glucose levels. Next, the respondents were given an intervention in the form of consuming Smallanthus sonchifolius leaf tea for 10 days. Each respondent received 10 tea bags, with a dosage of one tea bag (10 grams) brewed using approximately 150 ml of water and consumed twice daily, namely before breakfast and before dinner. After the intervention period was completed, a re-examination (posttest) was conducted using the same method to determine changes in the respondents' blood glucose levels.

RESULTS AND DISCUSSION

An assessment was conducted on five respondents in Kemutug Kidul Village, which showed that all respondents had random blood glucose levels above the normal limit, namely more than 200 mg/dl. Blood glucose levels before the intervention ranged from 226 mg/dl to 308 mg/dl, thus all respondents were categorized as having hyperglycemia. Based on the assessment results, the following nursing diagnoses can be established: (D.0027) instability of blood glucose levels related to glucose metabolism disorders(PPNI, 2017).

The plan to address this problem involves implementing non-pharmacological therapy by consuming tea made from insulin leaves (Smallanthus sonchifolius) to help lower blood glucose levels. The intervention is intended to improve blood glucose levels.(PPNI, 2019).

During the intervention, all respondents were able to follow the recommendations for regularly consuming insulin leaf tea, and no significant side effects were observed. Evaluations of all five respondents showed a decrease in blood sugar levels. Data from blood sugar levels before and after the intervention for each respondent are presented in the following table.

Table 1. Comparison of blood sugar levels before and after administration of insulin leaf tea in Kemutug Kidul Village.

No.	Name	Code	Pre	Post	Difference
1.	Mr. S	A1	275 mg/dl	122 mg/dl	153 mg/dl
2.	Mrs. S	A2	308 mg/dl	188 mg/dl	120 mg/dl
3.	Mrs. S	A3	267 mg/dl	142 mg/dl	125 mg/dl
4.	Mr. S	A4	226 mg/dl	104 mg/dl	122 mg/dl
5.	Mrs. K	A5	305 mg/dl	172 mg/dl	136 mg/dl
Average			276.5 mg/dl	145.6 mg/dl	131.2 mg/dl

Based on the table above, each respondent experienced a decrease in blood sugar levels. The highest decrease occurred in respondent A1, with a difference of 153 mg/dl, while the lowest decrease occurred in respondent A2, with a difference of 120 mg/dl. Overall, these findings indicate a trend toward decreased blood sugar levels in all respondents after the insulin leaf tea intervention.

Discussion

The study results indicated that Smallanthus sonchifolius leaf tea has the potential to lower blood glucose levels in all respondents with hyperglycemia. In addition to changes in blood glucose levels, respondents also reported improvements in several hyperglycemia-related symptoms, such as reduced tingling and numbness, after the intervention.

These results are in line with the results of a study by Honoré, Cabrera, Genta, and Sánchez which stated that Smallanthus sonchifolius leaf extract has a therapeutic effect on diabetes conditions through biological activities that play a role in improving metabolic conditions in mice with diabetes.(Yanto & Priskila, 2024). Similar to research byManan (2024)which shows that the use of insulin leaves has the potential to help reduce and control blood sugar levels in diabetes mellitus sufferers with hyperglycemia.

The reduction in blood glucose levels is thought to be related to the bioactive compounds contained in Smallanthus sonchifolius leaves, including flavonoids, chlorogenic acid, fructooligosaccharides, and polyphenols, which have antioxidant activity. These compounds are reported to play a role in enhancing insulin response and suppressing increases in blood glucose levels.(Renowing et al., 2025)The antioxidant activity of these compounds also plays a role in reducing oxidative stress that often occurs in hyperglycemic conditions, thereby helping to improve glucose metabolism in the body.(Saputri et al., 2025).

The differences in the degree of blood glucose reduction in each respondent are likely influenced by several factors, including compliance with insulin leaf tea consumption, diet, physical activity, and variations in individual physiological responses to the intervention. This is in line with research.Yanto & Priskila (2024) which explains that the success of using insulin leaves in managing diabetes mellitus is not only influenced by the content of active compounds, but also by the consistency of consumption and individual lifestyle factors.

Overall, the results of this study indicate that Smallanthus sonchifolius leaf tea has the potential to be used as a non-pharmacological adjunct therapy to help manage hyperglycemia in people with diabetes mellitus. However, this study has limitations, particularly the relatively small number of participants. Therefore, further research with a larger number of participants is needed to achieve more optimal results.

CONCLUSION

Based on the research results, administering insulin leaf tea for 10 days showed a decrease in blood glucose levels in all respondents, with an average decrease of 131.2 mg/dl from 276.5 mg/dl to 145.6 mg/dl. These findings confirm that insulin leaf tea has the potential to be used as a non-pharmacological complementary therapy to help control hyperglycemia in the community, particularly diabetes mellitus sufferers in Kemutug Kidul Village.

However, the results of this study have limitations, particularly the very small sample size of only five respondents, and the one-group pretest-posttest design without a control group. Therefore, the effect of the intervention cannot be fully determined from external factors. It is recommended that future research involve a larger number of respondents, use a control group, and consider other factors such as diet, physical activity, and adherence to consumption for stronger and more generalizable results. Practically, these findings can provide a basis for health workers and the public to utilize insulin leaf tea as a complementary therapy, but it must still be accompanied by blood sugar monitoring and not replace primary medical therapy.

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