

Application Of Soursop Leaf Decoction (*Annona Muricata*) In Reducing The Rate Of Blood Sugar In The Elderly With Diabetes Type 2 Mellitus

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Abstract: The elderly are someone who has entered the age of 60 years as they get older will cause many complications to the body so that it will cause diseases such as Diabetes Mellitus. Diabetes mellitus is a chronic metabolic disease characterized by increased blood glucose levels or hyperglycemia. One alternative that helps lower blood sugar levels is a decoction of soursop leaves (*Annona Muricata*) which contains flavonoid compounds, which are antidiabetic because flavonoids are able to neutralize free radicals so that they can prevent damage to pancreatic beta cells. This study aims to determine the effect of boiling water from soursop leaves (*Annona Muricata*) on reducing blood sugar levels in the elderly with type II diabetes mellitus. This research was conducted descriptively with a case study approach on two elderly people in Gampong Tumbo Baro, Kuta Malaka District, Aceh Besar Regency on December 22-28, 2025. The instruments used include an informed consent sheet, a study sheet, an observation sheet, a blood sugar measuring device, an SOP sheet, soursop leaves and water. Results showed a decrease in blood sugar levels from 305 mg/dl to 257 mg/dl in subject I, and from 295 mg/dl to 212 mg/dl in subject II. In conclusion, soursop leaf decoction is effective in lowering blood sugar levels. It is hoped that soursop leaf decoction can be used as one of the interventions to lower blood sugar levels in the elderly.

Keywords: Type II Diabetes Mellitus, Blood Sugar Levels, Soursop Leaf Stew, Elderly.

Introduction

The elderly are someone who has entered the age of 60 years and above as they get older, many problems that are overcome cause impacts or complications on the body so that they will cause diseases such as stroke, hypertension, osteoporosis and diabetes mellitus. Diabetes mellitus is a chronic metabolic disease characterized by increased blood glucose levels or hyperglycemia (WHO, 2024).

The American Diabetes Association (ADA) says diabetes mellitus is divided into three, namely type I diabetes mellitus, type II diabetes mellitus, and gestational diabetes mellitus. Gestational diabetes is diabetes that is diagnosed in the second or third trimester of pregnancy. Type I diabetes mellitus is

characterized by insufficient insulin production leading to absolute insulin deficiency and autoimmune beta cell damage. Type II diabetes mellitus is caused by a progressive loss of beta cell insulin secretion, which is more commonly encountered at age 30, occurring when the pancreas produces poor-quality insulin or loss of beta insulin secretion caused by insulin resistance (Care & Suppl, 2021).

Based on data from the *International Diabetes Federation* (IDF, 2024), the number of people with diabetes mellitus in the world reaches 589 million adults (20-79 years) living with diabetes, and in the western Pacific region there are 215 million sufferers. It is estimated that by 2050, this number will increase to 254 million.

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Meanwhile, in Indonesia, (Ministry of Health of the Republic of Indonesia, 2024) stated that Indonesia is ranked 5th out of the 10 countries with the most diabetes with a total of 19.47 million diabetics, with a prevalence of diabetes of 10.6%. Based on data from Riskesdas (2018), the prevalence of diabetes in Indonesia in the elderly group (age 60 years) is higher, which is 19.9%.

Data from the Aceh Health Office noted that the number of people with diabetes mellitus continues to increase to 154,889 people. Meanwhile, the areas with the highest number of people with diabetes mellitus are in the Aceh Jaya region with 63,512 people, Nagan Raya with 35,296 people and Bireun with 13,543 people (Aceh, 2024)

This study aims to find out the description of the administration of soursop leaf decoction (*Annona muricata*) in lowering blood sugar levels in the elderly with type II diabetes mellitus in Tumbo Baro Village, Kuta Malaka District, Aceh Besar Regency.

Method

This type of research is descriptive using the case study approach method (*case study*) is one of the research strategies to describe an in-depth analysis with the subject matter of the problem of "what/what", "how", or "why" about one case or compound case of contemporary phenomena with a qualitative research approach/method (Yusuf, 2015). This case study aims to illustrate the administration of soursop leaf decoction (*Annona Muricata*) in lowering blood sugar levels in the elderly with type II diabetes mellitus.

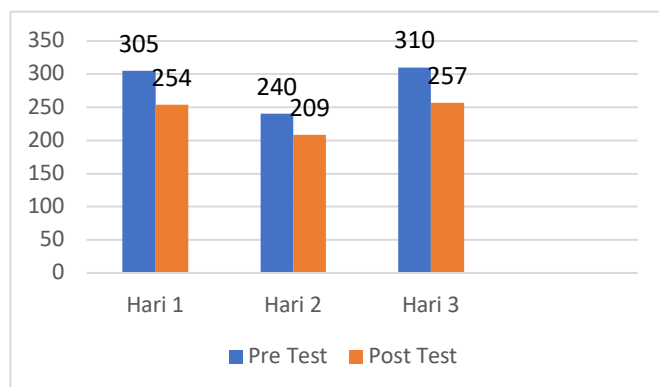
This research uses several research instruments such as study sheets, *informed consent* sheets, observation sheets, blood sugar level measurement tools, soup sheets, red soursop leaves (*Annona Muricata*).

Result and Discussion

Based on the results of the study, it is known that before and after nursing intervention with the application of soursop leaf boiling water (*Annona Muricata*), the glucose levels of subjects I and subjects II decreased from before, The changes are as follows:

Diagram 4.1

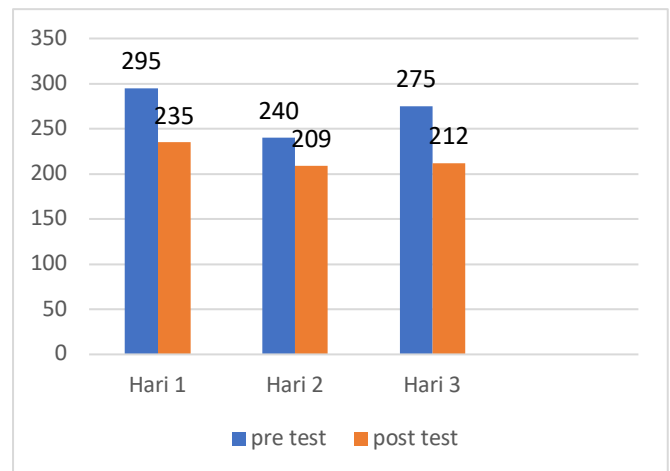
The results of the evaluation of subject I before and after the application of soursop leaf boiled water (*Annona Muricata*) in lowering blood glucose levels for 3 times a week.



Based on diagram 4.1, it is known that there was a decrease in blood glucose levels in Mrs. W after the application of soursop leaf boiling water (*Annona Muricata*) for 3 times a week, which previously the blood glucose level of subject I was 305 mg/dl to 257 mg/dl.

Diagram 4.2

The results of the evaluation of subject II before and after the application of soursop leaf boiling water (*Annona Muricata*) in lowering blood glucose levels for 3 times a week.



Based on diagram 4.2, it is known that there was a decrease in blood glucose levels in Mrs. M after the application of boiling water of soursop leaves (*Annona Muricata*) for 3 times a week, which previously the blood glucose level of subject II was 295 mg/dl to 212 mg/dl.

Based on the results of the research on the application of soursop leaf decoction (*Annona Muricata*) in lowering blood glucose levels in the elderly with type II diabetes mellitus, it was obtained that there was a change in blood glucose levels in the elderly with intermediate type diabetes mellitus before and after the application of soursop leaf decoction (*Annona Muricata*). In subject I, before application, GDS was obtained at 305 mg/dl and after application for 3 times a week, the result was 257 mg/dl. In subject II, before application, GDS was obtained at 295 mg/dl and after application for 3 times a week, the result was 212 mg/dl.

According to research assumptions, soursop leaf decoction (*Annona Muricata*) is effective in soursop leaves (*Annona Muricata*) has a content of alkaloids, flavonoids and lectins. Scientifically, soursop leaves (*Annona Muricata*) are rich in flavonoid compounds that contain antioxidant properties because they can capture free radicals by releasing hydrogen atoms from their hydroxyl groups, are antidiabetic because flavonoids are able to act as compounds that can neutralize free radicals so that they can prevent pancreatic beta cell damage, antiseptic and anti-inflammatory (Mardian 2018).

This is in accordance with the results of this research, this is supported by research conducted by

Yazid & Suryani (2017). Regarding the administration of soursop leaf extract that can affect glucose levels before being given 154 mg/dl and after being given an intervention of 132 mg/dl in diabetic patients, it was concluded that consuming soursop leaves as a complement to pharmacological treatment can have an effect on lowering blood sugar levels.

There are several factors that support the success of the application of soursop leaf decoction (*Annona Muricata*) in this case study, namely knowledge, family support and frequency of therapy.

Based on the subject's knowledge, it is also a success factor in the application, subjects I and subject II said that they had received exposure and education related to soursop leaves (*Annona Muricata*) in lowering blood glucose levels.

According to the assumption that research knowledge is very important in improving the degree of health, which is also the better the way of knowledge, maintenance and treatment so that the diseases suffered are controlled.

This can also be proven by research conducted by Amalia and Roissiana (2023), knowledge is very important for the formation of a behavior. The higher the level of knowledge a person has, of course, the more information he has so that it affects a person's behavior.

Apart from the knowledge factor, family support is also very influential. Where when the research was applied to subject I, it seemed that the family always provided emotional support to the subject. The family always reminds the subject to apply soursop leaf decoction (*Annona muricata*).

According to the assumption of research family support is very important to support the successful implementation of soursop leaf decoction (*Annona Muricata*), because with family support it can increase motivation so as to increase the subject's compliance in the implementation of therapy which has an impact on reducing blood glucose levels from the first day to the last day.

This can also be evidenced by the results of research from Arini et al. (2022) stating that family support in the treatment process for people with diabetes mellitus is very important. The family has a big message in supporting and motivating patients in undergoing the application of soursop leaf decoction (*Annona Muricata*) in terms of psychological and moral support.

In addition to the factor of knowledge and family support, the frequency of therapy is also very influential. Where the frequency of application of therapy, the administration of soursop leaves (*Annona Muricata*) to subjects I and subject II is 3 times a week as many as 10 soursop leaves (*Annona Muricata*) boiled with 400ml of water until the remaining 150ml remains.

According to research assumptions, the application of soursop leaf decoction (*Annona Muricata*) given regularly with a consistent time can reduce blood glucose levels in patients with type II diabetes mellitus.

This is proven by research (Noviana & Wreksagung, 2021) that there is an effect of reducing glucose levels before being given soursop leaf (*Annona Muricata*) decoction water 337.27 mg/dl and after being given soursop leaf decoction (*Annona Muricata*) 144.07 mg/dl. This means that there is an effect of soursop leaf decoction on blood sugar levels in people with type II diabetes mellitus.

The factors that affect the increase in blood sugar levels are the type of food consumed, stress, gender, age and physical activity.

The first factor is the type of food consumed. Based on the results of the study, it is known that subject I increased at the third meeting Where the blood glucose level of subject I at the third meeting was 310 mg/dl. This is because subject I consumed foods and drinks that contain a lot of sugar such as srikaya jelly bread, sweet tea, milk coffee and durian.

According to research assumptions, the type of food consumed can increase blood glucose levels, because Indonesian people like to consume fatty foods and drinks that contain a lot of sugar such as sipa saji, contemporary water, high-sugar foods and fried foods.

This is in accordance with the results of research by Fithryani & Simatupang, (2023) Energy intake that exceeds the body's needs will cause higher glucose accumulation. Third, the body's tissues cannot store or use glucose effectively, which will cause an increase in blood glucose levels to become toxic to the body. In patients with diabetes mellitus, high blood glucose levels are usually caused by excessive energy intake from food.

The second factor that causes type 2 diabetes mellitus is Stress, based on the results of the study it is known that subject II experiences stress and significant results are found in subject II, subject II complains of stress because of thinking about his finances. This is evidenced by the blood clot level in subject II increasing on the third day with a blood glucose level of 275 mg/dl.

According to research assumptions, stress can affect blood glucose levels due to an increase in the hormone cortisol. The hormone cortisol increases blood pressure, energy levels (blood sugar), and immune function to cope with stress. The process is that the adrenal glands release in a "fight-or-flight" response to prepare the body for a threat, but excessive release in the long run can have devastating consequences.

This is in accordance with the research of Derek et al. (2017) stated that stress is an influential factor for diabetic mellitus sufferers because increased production of stress hormones will cause glucose levels to increase.

Relaxed conditions can restore the counterregulation of stress hormones and allow the body to use insulin effectively.

The third factor that affects type II diabetes mellitus is gender. Based on the results of the study, it is known that subject I and subject II are female.

According to the assumption of the study, women are more likely to experience diabetes mellitus than men due to hormones and also the risk of weight gain which greatly affects diabetes mellitus.

This is evidenced by the results of research from Komariah & Rahayu (2020) which shows that there is a relationship between sex and fasting blood glucose levels. The results of the study found that female respondents had a 2,777 times greater risk of developing type II diabetes mellitus compared to male respondents. This is related to pregnancy where pregnancy is a risk factor for the occurrence of diabetes mellitus.

The fourth factor that causes type II diabetes mellitus is age, because in old age there is a biological or physiological decline that causes the pancreatic organ to also experience a decrease in performance. Based on the results of the study, it is known that subject I is 55 years old and subject II is 50 years old.

According to the assumption that age can be a factor in the occurrence of diabetes mellitus because as a result of aging, there will be a decrease in insulin sensitivity. Generally, humans experience a rapid physiological decline after the age of 40, one of which is the pancreatic organ itself.

This is supported by research by Komariah & Rahayu, (2020) which shows that there is a relationship between age and fasting sugar levels in diabetic patients along with age, especially at the age of more than 40 years, due to the aging process causing a reduction in the ability of pancreatic beta cells to produce insulin. In addition, in older individuals there was a 35% decrease in mitochondrial activity in muscle cells. This is associated with an increase in fat levels in the muscles by 30% and triggers the occurrence of insulin resistance.

The fifth factor that affects type II diabetes mellitus is physical activity. Based on the results of the study, it is known that subjects I and subject II rarely do physical activity, which must be reduced due to age factors.

This study assumes that a person who rarely does physical activity will be more susceptible to diabetes mellitus because when they rarely do physical activity, calories in the body will accumulate.

This is supported by Regita et al, (2020) this means that there is a significant relationship between physical activity behavior and blood sugar level control statistically, where regular moderate activity can normalize blood sugar levels above normal and vice versa with the level of tightness of the relationship in the

category. People with type II diabetes mellitus with the right intensity of physical exercise reduce the risk of complications.

Conclusion

Based on the exposure of the focus of the study and discussion on the subject of type II diabetes mellitus related to the reduction of blood glucose levels, after the application of soursop leaf decoction (*Annona Muricata*) it can be concluded that this therapy is effective and can reduce blood glucose levels in the elderly with type 2 diabetes mellitus. Glucose levels in subject I decreased from 305 mg/dl to 257 mg/dl and in subject II decreased from 295 mg/d to 212 mg/dl.

The success factors of the application of soursop leaf decoction (*Annona Muricata*) in this case are, knowledge, family support and frequency of administration, as for the factors that affect blood glucose levels, namely, the type of food consumed, stress, gender, age and physical activity.

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Author Contributions

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Conflicts of Interest

The researcher did not find any obstacles during this implementation.

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