

# Paper

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## The Effect Consumption Lamtoro (*Leucaena Leucocephala*) To Decrease Blood Glucose Levels of Diabetes Mellitus Patient

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### ABSTRACT

Diabetes mellitus is a metabolic disease with many symptoms of urination, thirst and eating. Lamtoro (*Leucaena Leucocephala*) is the traditional ingredients in order to decrease blood glucose levels in patients with diabetes mellitus. The research use design pre-experiment with *one group pre test method post test*. Sampling technique used was *purposive sampling*. With as many as nine people took the respondents in Health Centers Sidotopo Wetan Surabaya. The results showed the influence eating lamtoro are decrease blood glucose levels. A total of 7 people (77.77%) that declined and as many as two people (22.23%) who increased in patients with diabetes mellitus results showed a decrease blood glucose levels. From the statistic test with Wilcoxon signed ranks test was obtained  $P > 0.05$ . In *pre-experimental* research does not show a decrease in patients with diabetes mellitus. Its means eating lamtoro influence with the decrease blood glucose levels in patients with diabetes mellitus is caused by diet, in taking the drugs, behavior and activity, and stress levels are high. The implication of this study the effect of eating lamtoro by controlling and supported not consume foods containing carbohydrates, proteins and fats is too high.

Keywords : *Lamtoro, Glucose Concentrate Decrease, Diabetes Mellitus*

### Introduction

Diabetes is not curable but can be stabilized with healthy diet, sufficient exercise, fruits, fruits in addition to rich in vitamins, also contains a variety of substances that can help cure diseases and controlling blood glucose levels. Vegetables and fruits are healing substances that are rebuilding the damaged tissue. Fruits can reduce blood glucose levels by inhibiting the absorption of sugar and

stimulates pancreatic beta cells to produce insulin ( Djauhari , 2009). Genetic factors and poor lifestyle and eating is a cause of the disease known as diabetes or sugar arise. The disease is characterized by blood glucose levels that exceed normal limits as a result the body lacks insulin. In addition to the medical treatment diabetes can also be overcome premises of traditional medicine that is by balancing blood glucose levels.

Diabetes mellitus ranks 4th as a human killer. The International Diabetes Federation Congress in 2003 states that more than 194 million people worldwide suffer from this disease in Indonesia alone recorded 2.5 million people are expected to continue to grow (Suryo, 2009:5). According to WHO data, Indonesia kept ranked 4th largest in the number of people with Diabetes Mellitus in the world. In 2000, approximately 150 million people with diabetes mellitus. This number increased to double by 2005 and could partially.

The increase will occur in countries that are developing. However, in 2006 the estimated number of diabetics in Indonesia rose sharply to 14 million people, of which only 50 percent were aware of them have it and only about 30% are coming for treatment regularly (Nabil, 2009: 5). This figure will grow to more than 380 million in 2025 (Djauhari, 2009: 17). Every 19 minutes there is one person in the world who had a stroke due to complications from diabetes, every 90 minutes there is one person in the world who are blind due to complications of diabetes and every 12 minutes there is one person in the world who have a heart attack due to complications of diabetes. The population of diabetics in Indonesia is estimated between 1.5 to 2.5%, except in Manado around 6%. With a population of around 200 million people, it's meaning approximately 3-5 million of whom suffer from diabetes (Nabil, 2009: 11). From

preliminary study, diabetics in January there were 237, February 210 and March 236 patients at the health center Sidotopo Wetan Surabaya.

Most of the people on the ground are like to consume traditional medicine for any illness he suffered. Patients who consume lamtoro by boiling using leaves or fried seeds. These patients not only consume lamtoro but also consume brotowali, retreat, apple, aloe vera etc. Lamtoro in Indonesia almost fell after planthopper pests. Propagation besides the old seed dispersal can also be done by stem cuttings. But consuming lamtoro too much and in the long term can cause hair loss because it contains substances mimosin, but mimosin easily lost during the cooking process and immersion. The prevalence of diabetics is increasing in Indonesia, the World Diabetes Day 1996, it is advisable to look for natural ingredients are readily available to be used as a traditional medicine that's valuable because current diabetes drugs are quite expensive. Lamtoro seeds are easily found in Indonesia and are believed by the public can lower blood glucose levels.

Although diabetes mellitus is a chronic disease that does not cause death directly, but can be fatal if treatment is not appropriate. Therefore, the management of diabetes mellitus requiring multidisciplinary treatment that includes a non - drug therapy and drug therapy. In this study will try to

review the herbal treatment of diabetes mellitus by using lamtoro.

### **Literatur review**

Diabetes is one of the oldest diseases in humans. The full name is diabetes mellitus, derived from the Greek word: Siphon (pipeline) and sugars that describes the symptoms of uncontrolled diabetes, namely the release of a number of sweet urine because it contains sugar (glucose). (Ruby W. Bilous, 2008: 7). Diabetes is a permanent change in body chemistry system which resulted in the blood contains too much sugar. (DR. Ruby W. Bilous, 2008: 10). Diabetes mellitus is a disease in which glucose (a simple sugar) in the blood has high levels because the body can not release or use insulin adequately. (Nably RE, 2009: 12). Diabetes mellitus, commonly called diabetes alone is a condition which results in increased levels of glucose in the blood. Diabetes is a disorder in terms of chemical benefit right on carbohydrates, fats, and proteins from food, due to insufficient expenditure or lack of insulin. Insulin is a hormone produced by prakeas to menggatur amount of sugar in the blood. (Savitri Ramaiah, 2006: 1) Lamtoro (*leucaena leucocephala*) is a plant that has a tree trunk -sized hard and not rice. The leaves are compound decomposes in a double-bladed stalk.

### **Research Methods**

The designs are in use at research with pre experiment with methods one group pre test post test that is by giving lamtoro to decrease glucose levels in patients with Diabetes Mellitus in Tambak Wedi Lama Surabaya. The independent variable in this study is giving lamtoro to Diabetes Mellitus patient in Tambak Wedi Lama Surabaya.

The dependent variable in the study is the reduction of glucose levels in people affected by Diabetes Mellitus in Tambak Wedi Lama Surabaya. The dependent variable in the analysis of the data will this study is the reduction of glucose levels before therapy was given lamtoro (pre) and a decrease in glucose levels after giving lamtoro therapy (post).

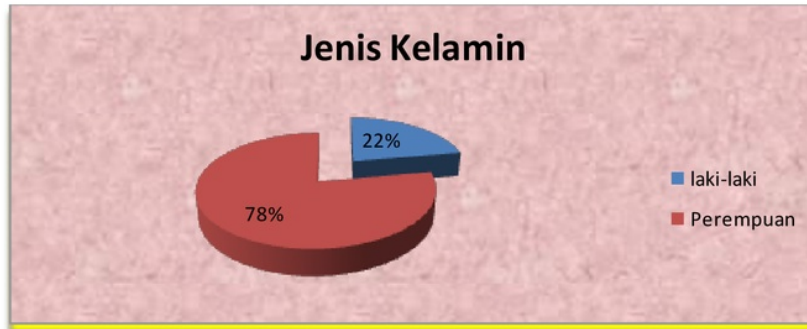
The population in this study is overall of patients with diabetes mellitus who have a high glucose levels in Tambak Wedi Lama Surabaya Year 2010 in March. Sampling technique used in this study with purposive sampling, the sampling technique with particular consideration as desired researchers. Be obtained from the sampling formula sample size is 9. This study will be conducted in March 2010 in the Old Pond Wedi Surabaya.

## Research Result

### Characteristics of Respondents

#### a. Characteristics of respondents by sex

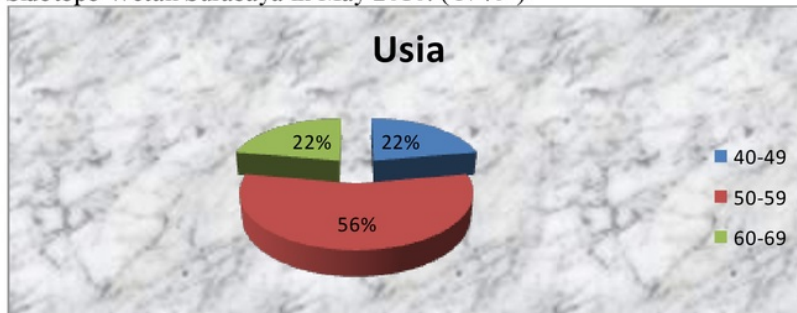
Figure 5.1 The frequency distribution of respondents by sex in Puskesmas Sidotopo Wetan Surabaya in May 2010. ( N = 9 )



Of the pie chart Figure 5.1 shows  $> \frac{1}{2}$  ( 77.8 % ) women and the remaining respondents ( 22.2 % ) male respondents .

#### b . Characteristics of respondents according to age

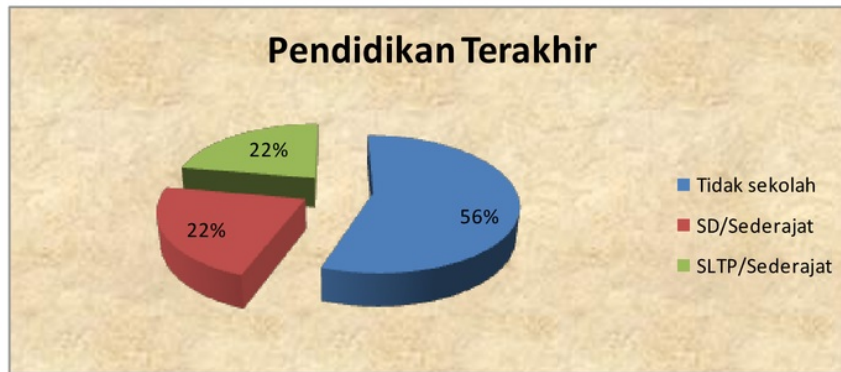
Figure 5.2 The frequency distribution of respondents by age in Puskesmas Sidotopo Wetan Surabaya in May 2010. ( N : 9 )



From diagram 5.2 shows that  $> \frac{1}{2}$  respondents aged 40-49 years ( 55.6 % ) and 50-59 years old and 60-69 years old the same population .

c . Characteristics of respondents by education level

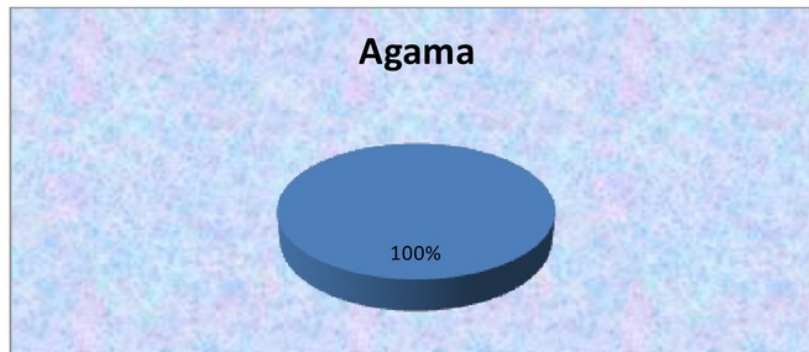
Figure 5.3 The frequency distribution of respondents by educational level in PHC Sidotopo Wetan Surabaya in May 2010. ( N : 9 )



From diagram 5.3 shows that  $> \frac{1}{2}$  of respondents never go to school as much ( 55.6 % ) , elementary / junior high school or equivalent and / or equivalent ( 22.2 % ) the same population .

d . Characteristics of respondents by religion

Figure 5.4 Distribution of respondents according to the frequency of religion in Puskesmas Sidotopo Wetan Surabaya in May 2010 .

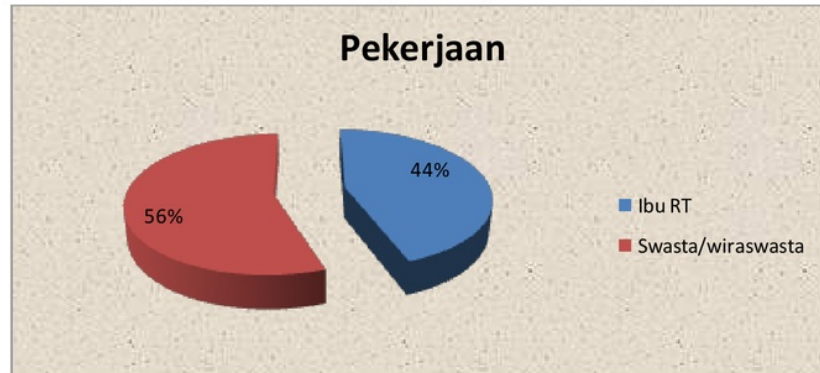


From diagram 5.4 shows that all respondents Moslem



a. Characteristics of the sample respondents sugar levels by occupation

Figure 5.5 The frequency distribution of respondents by occupation in Puskesmas Sidotopo Wetan Surabaya in May 2010. ( N : 9 )



From diagram 5.5 shows that as many as 44.4 % of the sample worked as housewives , and 55.6 % as private work / entrepreneur .

**Special Data**

In this specific data will be presented on the effect of the reduction in banana chinese blood sugar levels in patients with diabetes mellitus in Puskesmas Sidotopo Wetan Surabaya

Characteristics according to respondents

a. Respondents sugar levels before taking Lamtoro

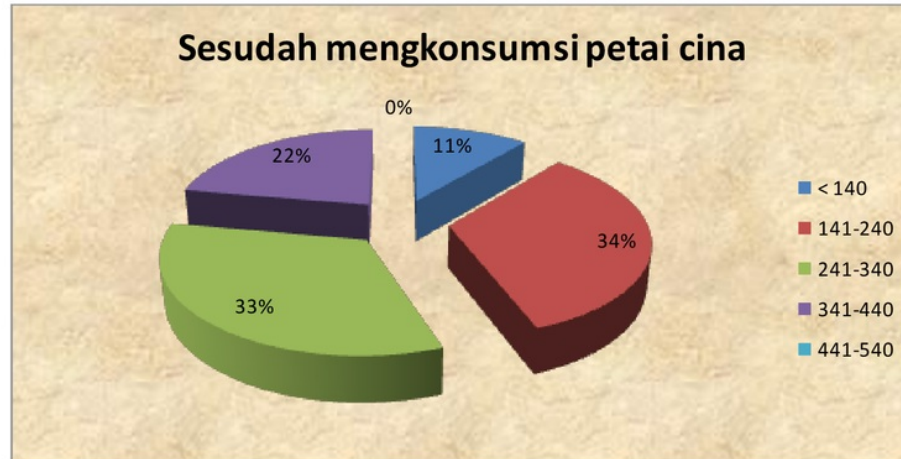
Figure 5.6 Distribution of the frequency of respondents before eating banana china in Puskesmas Sidotopo Wetan Surabaya in May 2010. ( N = 9 )



From diagram 5.1 shows that ( 34 % ) of respondents GDA 141-240 mg / dl ( 22 % ) 241-340 mg / dl ( 33 % ) 341-440mg / dl and ( 11 % ) 441-540 mg / dl.

b . Respondents sugar levels after eating Lamtoro

Figure 5.7 Distribution of the frequency of respondents after eating a banana china in Puskesmas Sidotopo Wetan Surabaya in May 2010. ( N = 9 )



From diagram 5.2 shows that 11 % of respondents with GDA < 140 mg / dl and 141-240 and 241-340 mg / dl have the same proportion as much as 3 people ( 34 % ) , 341-440 mg / dl as many ( 22 % ) , while 450-54 mg / dl 0 % of respondents .

c . Effect of Chinese Petai Against Decrease Blood Sugar Levels In Patients

Table 5.3 Data pre and post test 9 respondents diabetes mellitus in Health Centers Sidotopo Wetan Surabaya in May 2010. ( N = 9 ) in May 2010 .

No Sam pel	GDA (mg/dl) Eksperimen		
	Pre test	Post test	Perub
1	374	338	-36
2	230	221	-9
3	484	379	-105
4	254	317	63
5	382	164	-218
6	321	365	44
7	215	194	-21
8	170	94	-76
9	350	279	-71
Rata- rata	308,89	261,22	-39,66
Wilcoxon signed ranks test P = 0,31			



Table 5.2 shows the decline GDA experiment at 7 study sample ( 77.77 % ) , and an increase in the GDA 2 study sample ( 22.23 % ) . From the test results statistically by the Wilcoxon signed ranks test was obtained  $P > 0.05$  .

## **Discussion**

### **Blood glucose levels of patients with diabetes mellitus pre-test.**

From the results obtained the number of respondents before consuming lamtoro with blood glucose levels of 141-240 mg / dl and 341-440 mg / dl have the same proportion as much as 3 people (33.34%), while the glucose content <140 mg / dl and 241-340 mg / dl as much as 2 people (22,23%) and 441-540 mg / dl by 1 person (11.1%). From the results of these data shows that the majority of respondents have blood glucose levels above normal (rather high). This is in accordance with the opinion according to Wright. Boglar (2008) that the threshold blood glucose 120-140 mg / dl. Some of the things that cause the blood sugar to rise. For example heredity, race, obesity, age, lack of exercise, pregnancy, infection and stress. Biological changes that may play a role in the occurrence of diabetes mellitus include: Increased excessive thirst, excessive hunger increased, increased frequency of urination including at night.

Researchers assumed that levels of blood glucose respondents were still high average due to poor lifestyle that researchers conclude based on the results wawancara with

the respondents in Health Centers Sidotopo Wetan Surabaya. According to Hans Tandra (2008) that in terms of the lifestyle of diabetics there are some things that need to be considered, including the habit of consuming foods containing sugar and salt overload, lack of activity, stress, and others. Obtained about 40% of the sample used to consume foods that have a high blood glucose. Food intake consists of carbohydrates, protein and fat, three carbohydrates raise blood glucose but the most powerful to improve glucose. This will cause blood glucose levels rise and there is an excess of carbohydrates in the body will result in the entire system of the body out of balance again.

Stress is one cause of increased blood sugar levels and heart disease. It can be seen from the results of observations made. From the results of the research can be that more than 80% of the sample less fun life, among others, economic hardship, lack of harmony in the household, work in the elderly.

### **Blood sugar levels of patients with diabetes mellitus posttest intervention**

Based on the results of data measurement sugar levels in the experimental group that has been done 3 times the therapeutic banana china and 3 times the checks showed that the number of respondents with higher levels of blood gulah < 140 as one of the respondents ( 11 % ) 141-

240 mg / dl as many as three respondents ( 34 % ) , 241-341 mg / dl three respondents ( 33 % ) and 341-440 mg / dl as much as 2 respondents ( 22 % ) . respondents decreased and as many as five respondents ( 77.77 % ) of respondents have increased 2 respondents ( 22.23 % ) . These measurements were performed after the intervention lamtoro for 1 week .

From the results obtained glucose levels are experiencing the difference between one person and another. Changes in blood glucose levels caused by diet , not terlaturnya in taking medicine , behavior and activity , and stress levels are different for each person during the course of therapy .

#### **On average in patients with diabetes mellitus**

In patients with diabetes mellitus by Wilcoxon signed ranks test. Research conducted by pre experiment with methods one group pretest posttest , the average respondent decreased blood sugar levels of the test results with the Wilcoxon signed ranks statistic test obtained  $P > 0.05$ . Although there some respondents who experienced an increase ( 22.23 % ) , it is probably because there is no control over lifestyle, and behavior that can lead to changes in glucose levels in people with diabetes mellitus at the time of the herbal therapy for > 1 week . Changes in blood glucose levels caused by uncontrolled diet, drinking

less regular drugs, behavior and less activity, and stress levels are rising .

#### **Effect of Lamtoro Against Decrease Blood Sugar Levels in Patients with Diabetes Mellitus In Health Center Sidotopo Wetan Surabaya.**

Wilcoxon signed rank test in the experimental group by comparing the GDA before the intervention (pre-test) with GDA after the intervention (post test) produces  $\rho = 0.310$ . This means that there is a difference between GDA before and after consuming lamtoro for > 1 week. While the Wilcoxon signed rank test test by comparing the blood glucose levels before the intervention (pre-test) with blood sugar levels after the intervention (post test) produces  $\rho = 0.310$  This means that there are differences in the average GDA before and after the intervention banana china for > 1 week.

Physiologically, both in normal and diabetic individuals. Insulin is a hormone produced by pancreas to regulate the amount of glucose in the blood. Insulin unique shape glucose levels. Insulin makes cells extract glucose from the blood and prevent it to destroy the protein and fat. Partly stored and partly used for energy. Lamtoro chemical content can stabilize insulin normal way of working. According to (DR. Ruby W. bilous, 2008: 10) The sugar in the blood comes from the food we were chemically treated by the liver. Some glucose are stored and partly used for energy. Insulin unique shape, sticking

in special containers on the surface of the cells of the body diseluru. In this way, insulin makes cells extract sugar from the blood and prevent it to destroy the protein and fat.

Results of this study confirmed the results of statistical testing that serves to know is there any difference in blood glucose levels with a pre-experimental study before the intervention (pre-test) and after intervention (post-test). From the test results statistically by the Wilcoxon signed ranks test was obtained  $P > 0.05$ . After treatment the form of lamtoro for  $> 1$  week. In the pre-experimental study did not show a decline in patients with diabetes mellitus. This means no intervention effect banana china to decrease blood glucose levels in patients with diabetes mellitus in Health Centers Sidotopo Wetan Surabaya.

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