



The Difference in The Activity of Ethanol Extracts of Leaves of Anti Diabetic tin (*Ficus Carica* L.) Leaf, Rambutan (*Nephelium Lappaceum*) and Persimmon (*Diospyros Ft L*) on The White Mancit on Streptozotocin Induced

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Abstract. Diabetes mellitus is a metabolic syndrome most public figures around the globe with events 1-8%. This disease occurs when insulin in insulin production or tidakcukup may not function properly or the amount of insulin enough but it works less well characterized by high levels of sugar in the blood. The Research Design used in this research is experimental design pre test and post test design group, where only when the post test (end) only performed measurements. Research use only post test where observations are conducted as many as 3 times at the time after thera-py/experiment. Observations made after experiment (X 2) called the Post Test. It is known that a group of white male mice strain spreague dawley fed leaves etha-nol extract rambutan (*Ficus carica* L.), shows a decrease in blood sugar levels better when compared to the Group of ekstrak penginduksi with a persimmon the same form of induction of streptozoto-cin. Ethanol extracts of leaves of Rambutan (*Nephelium lappaceum*) Note can lower the blood sugar levels of 9 mg/dl and persimmon (*Diospyros ft L*) can lower the blood sugar levels of 5.3 mg/dl, while the leaves of Tin (*Ficus carica* L.) showed can increase blood sugar levels in mice white male spreague dawley strain induced streptozotocin. Keyword: self-acceptance, chronic kidney failure, hemodialysis.

Keyword: Streptozotocin, Rambutan Leaves, Leaf of Tin and Persimmon.

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1. Introduction

Diabetes mellitus is a metabolic syndrome most public figures around the globe with events 1-8%. This disease occurs when insulin in insulin production or tidakcukup may not function properly or the amount of insulin enough but it works less well characterized by high levels of sugar in the blood. The body is not able to produce insulin because cells of Langerhans islets undergoing β inflammation caused by the presence of viruses such as cochsakie virus, rubella,

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cito megalovirus (CMV), herpes and others. Lack of insulin causes hormone disruption biochemical processes in the body, i.e. a decrease in glucose uptake into the cells and an increase in glucose from the liver into the circulation. Insulin helps the process of destruction and absorption of glucose, fatty acids and amino acids. When insulin is not produced by the pancreas or insulin resistance occurs then the levels of glucose in the blood is increased so that the kidneys are not able to process the glucose and expelled through the urine. Hereditary factors and obesity and lack of exercise greatly influence diabetes mellitus (Kariadi, 2009).

Diabetes is characterized by hyperglycemia (elevation of blood glucose levels) which causes various metabolic disorders in the metabolism of short term and long term and protein fat causes a change of the flow rate that is irreversible. Long-term manifestations of diabetes can cause some complications as well as microvascular and macrovascular (Brahmachari, 2011).

The data of the WHO (World Health Organization) showing the 10 countries with the largest number of sufferers of diabetes mellitus in the world is the United States, China, India, Indonesia, Japan, Pakistan, Russia, Brazil, Italy, and Bangladesh. Indonesia ranks fourth. It is estimated by the year 2025 will be an increase in the number of sufferers of diabetes mellitus from 5 million in 1995 to 12 million sufferers of diabetes mellitus in the world. The number of diabetics in Indonesia is expected to double from 8.4 million in 2000 into 21.3 million people by the year 2030. Unhealthy eating patterns are thought to be one of the factors that influence (Munadjad, 2010).

Therapy for diabetes glucose-lowering treatment generally use the blood that had some flaws. Intensive therapy with using hypoglycemic will increase the risk of the occurrence of hypoglycemia which is a heavy mortality, increases of 19% and increase cardiovascular death of 43% (Bous-sageon et al., 2011). The high prevalence, treatment costs of diabetes has become a problem for the government and threats to individuals. Prevention of diabetes since the beginning is very important to do. Prevention and treatment with herbs for diabetes generally showed good efficacy and safety (Park, 2011).

Therapy of diabetes mellitus that take a long time allow the occurrence of usage together with herbal drugs and oral antidiabetic. Based on research in 11 Clinics Depok 2012, 101 of those respondents, a total of 52.47% use anti-diabetic herbal and 47.53% use ADO instead. Patients as much as 54.27% as user antidiabetic, it turns out that using a combination of ADO and anti-diabetic herbal of 71.70%, whereas 28.30% use anti-diabetic herbal (Adhithia, 2012).

In response to the diabetes, the drug only is the complement of the diet. The drug need only be given if arrangement is not the most nutritious diet controlling blood sugar levels. Oral anti-diabetic drugs may be useful to sufferers who are allergic to insulin or doesn't use insulin injections. While its use should be understood, that there is compliance with the indications, doses without causing hypoglycemia. Oral anti-diabetic drugs because most give unwanted side effects, then experts developed a system of traditional medicine for diabetes mellitus that is relatively safe (Trisnawati, 2013).

The last few years, secondary metabolites of plants has been widely scrutinized as a source of medicinal agents. Treatment of diabetes mellitus can be done medically with modern medicines and injections but because of the high cost of medical treatment is sometimes hard to do. Diabetes mellitus can also be overcome by utilizing natural treatment plants, therapeutic drugs. Nutritious plant remedies can be obtained easily, it can be quoted directly for fresh consumption or can be dried. Therefore, the traditional treatment with medicinal plants into alternative steps to overcome it (Khan, 2004).

More than a thousand plants are reported to have anti-diabetic effect. The mechanism of action of hypoglycemic plant such as the stimulation of insulin production, increased insulin sensitivity, or inhibition of intestinal amylase (Bhat, 2011). More than 400 species of plants are reported to be used for the treatment of diabetes. One of the plants used in the treatment of diabetes is the fig leaf (*Ficus carica* L.) (Khan, 2011).

Fig is one of the Moraceae plant family widespread in subtropical or tropical areas. In Indonesia, the leaves are used as a remedy for diabetes, kidney stones, hypertension and diabetes. The activity of the leaf of fig that has been reported is as an antioxidant, hepatoprotective, antimicrobial, antibacterial, antipyretic, immunomodulator, anti-diabetic, anti-inflammatory, anti-cancer and (Ahaddin, 2014). Based on the results of the research that has been done, it was reported that water and methanol extracts of fig leaf capable of lowering blood sugar levels. Fig leaves contain alkaloids, saponins, β -sterols, polyphenols and flavonoids. Flavonoid compounds, β -sterols, and polyphenols is reported can serve as anti-diabetic (Khan, 2011).

One of the other nutritious crops as anti-diabetic it is rambutan (*Nephelium lappaceum* L.). Plant rambutan (*Nephelium lappaceum* L.) has been widely known by the people of Indonesia and spread over a wide area, so easily obtained. Empirically known leaves rambutan is used to overcome the diarrhea, fever, and discolor the hair (Dhalimartha, 2014).

Persimmon (*Diospyros* sp. L.) in Greece is defined as a food of the God aka the food of the gods has a pretty good nutritional value. Persimmon fruit contains tannins and phenolic compounds. Phenol compounds is one of the types of components that are essential to the health of phytochemicals. Compounds of phenols in persimmon fruit can act as an antioxidant to inhibit the oxidation process and the process of the formation of free radicals. Antioxidant properties that may prevent the onset of various diseases, such as cancer, diabetes, and heart disease (Astawan, 2014).

Persimmon also is rich in antioxidant lycopene that serves as a deterrent to cancer, phytochemicals lutein, beta-carotene and fiber. The content of polyphenols in persimmon can lower the bad cholesterol that causes diabetes mellitus because it can suck out of insulin, whereas the pancreas can't make enough insulin to overcome a shortage of insulin, so the sugar

levels in the blood going up and can lead to heart disease. In use in the community, the persimmon is used to treat diabetes mellitus is as much as 500 grams per day (Utomo, 2007).

This research seeks to obtain information that the ethanol extract daun Tin (Ficus carica l.), leaf Rambutan (Nephelium lappaceum lowers blood sugar levels and cholesterol in mice white male spreague dawley strain induced streptozotocin diabetes, so the results of this research can help in the selection of the diabetes mellitus therapy better yet.

2. Research Methods

The research design used in this research is experimental design pre test and post test design group, where only when the post test (end) only performed measurements. Research use only post test where observations are conducted as many as 3 times at the time after therapy/experiment. Observations made after experiment (X 2) called the Post Test.

Description

01 : Pre -Post Test (Measuring sugar levels before and after the awarding of the extract of the fruit tin)

02 : Pre -Post Test (Measuring sugar levels before and after the awarding of the rambutan) leaf extract

03 : Pre -Post Test (Measuring sugar levels before and after infusion persimmon)

3. Research Result and Discussion

The results of the testing activity of anti-diabetes mellitus type II against white male mice strain spreague dawley which are performed with the use of ethanol extracts of leaves of Tin (Ficus carica l.) leaf, rambutan (Nephelium lappaceum l.) and persimmon (Diospyros ft L) in rats white male spreague dawley strain induced streptozotocin. From the observations indicate that the infusion of persimmon was able to give the effect of type II antidiabetesmelitus, because with the awarding of the ethanol extracts of leaves of Tin (Ficus carica l.) with the dose capable of lowering glucose levels dalamdarah, as shown in the table the following:

Tabel 1. Research Result

treatment	Time			
	T ₁	T ₂	T ₃	T ₄
Rambutan Leaf Extract	211	206	196	188

Tin Leaf Extract	230	232	225	217
Persimmon Extract	223	220	213	206

Description :

T1 = Rat blood sugar levels the day after 3 day observation

T2 = Rat blood sugar levels the day after 6 day observation

T3 = Rat blood sugar levels the day after 9 day observation

T4 = Rat blood sugar levels the day after 12 day observation

It is known that the male group of spreague dawley rats given ethanol extract from rambu-tan leaves (*Ficus carica* L) showed a better decrease in blood sugar levels compared to the persimmon extract group with the same induction in the form of streptozotocin induction. However, the highest increase in blood sugar levels was shown by the group of tin leaves (*Nephelium lappaceum* L), where there was an increase in large blood sugar levels on the 6th day of 232 mg / dl.

Because the normal blood glucose level of normal mice is 180-210 mg / dl, the rambutan leaf extract group shows a hyperglycemic state because it exceeds 210 mg / dl and the persimmon extract group has a hyperglycemic state because it exceeds 210 mg / dl, but is normal in measurements on day 12 (206 mg / dl). The increase in levels indicated by the rambutan leaf extract group and persimmon extract showed a not too large increase in levels compared to the fig leaf extract group, this was due to the administration of streptozotocin as a drug to increase blood sugar levels in male white rats spreague dawley strains which also could raise blood sugar levels. The effect of decreasing blood sugar levels began to occur on the 6th day after administration of rambutan leaf extract (T2), while the persimmon extract test showed a decrease in blood sugar levels starting on the 12th day (T4) and tin leaf extract preparation had not shown a decrease in sugar content blood in male white rats spreague dawley strains on the day

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4. Research Conclusion

Ethanol extract of Rambutan leaves (*Nephelium lappaceum*) is known to reduce blood sugar levels by 9 mg / dl and persimmon (*Diospyros kaki L*) can reduce blood sugar levels by 5.3 mg / dl, while Tin leaves (*Ficus carica L*) show can increase blood sugar levels in male white rats sprague dawley streptozotocin induced.

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