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## ***Passiflora foetida* Linn activity against streptozotocin-induced diabetic mice from South Sulawesi, Indonesia**

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### **ABSTRACT**

**4** This study aimed to examine the effect of *Passiflora foetida* Linn extracts at a dose of 400 mg/kgbw against streptozotocin-induced diabetic mice. This research used 30 male mice which divided into three treatment groups. The groups are the control group, the Streptozotocin (STZ) group, and the group of ethanol extract of the *Passiflora foetida* Linn herb for dose of 400 mg/kgbw. All groups were induced by STZ except control group. Blood glucose levels were measured before and after mice induced intraperitoneally with STZ dose 100 mg/kgbw. Statistical analysis showed that the control group and STZ group were significantly different ( $p < 0.05$ ). The STZ group showed significantly different ( $p < 0.05$ ) from extract dose of 400 mg/kgbw in mice. Based on the results, this study concluded that the ethanol extract of *Passiflora foetida* Linn has effect on lowering blood glucose levels in diabetic mice.

**Keywords:** *Passiflora foetida* Linn, diabetes mellitus, streptozotocin

### **INTRODUCTION**

**2** Diabetes mellitus is a group of metabolic diseases or disorders characterized by elevated blood glucose levels. Symptoms include polyuria, polydipsia, polyphagia, weight loss, fatigue, tingling and itching [1-2].

Synthetic drugs are generally administered orally has side effects that can cause resistance and organ damage. Therefore, the use of herbal as medicines by people believed to be more secure [3]. One of the plants that contain high antioxidants is *Passiflora foetida* Linn. *Passiflora foetida* Linn extract has antioxidant activity in rat hepatic with effective dose of 400 mg/kgbw [4]. Animal models of diabetes can be obtained by inducing chemical compounds [5]. Low-dose of streptozotocin induced repeatedly can decrease the number of beta cells of Langerhans of the pancreas [6]. Therefore, this research was aimed to investigate the effect of *Passiflora foetida* Linn extracts against streptozotocin-induced diabetic mice at its effective dose.

### **EXPERIMENTAL SECTION**

#### **RESEARCH METHODS**

##### **Tools and materials**

The tools and material used are a set of *One Touch Select Simple*®, analytical balance, streptozotocin, distilled water, 96% ethanol, cotton, filter paper, paper weigh, solution of 0.9% NaCl, glucose test strips (*One Touch Select Simple*®), Herbal of *Passiflora foetida* Linn (obtained from South Sulawesi Indonesia).

**Treatment of animals test**

A total of 30 male mice aged 2 months with a weight of about 20-30 grams were divided into 3 treatment groups. Each treatment group consist of 10 mice. The groups are group I as a control group, group II as streptozotocin (STZ) group, and group III as a group of *Passiflora foetida* Linn extract 400 mg/kgbw. Before treatment, the mice were adapted for 2 weeks. After that, the mice were fasted for 16 hours then weighed and measured the fasting blood glucose levels. Mice in group II and Group III were induced intraperitoneal by Streptozotocin. The extract is administered orally to group III for 21 days. Blood sampling performed on days 7<sup>th</sup>, 14<sup>th</sup>, and 21<sup>st</sup> after administration of the extract.

**RESULTS AND DISCUSSION**

This study was conducted in vivo using animal testing male mice (*Mus musculus*) who have more stable hormonal system than female mice. There are 30 male mice were used in this study which have been adapted for 14 days. Before treatment, the mice were fasted for 16 hours to avoid the influence of food at the time of initial measurement of blood glucose levels.

In this study, diabetic mice obtained by inducing Streptozotocin (STZ). The STZ intraperitoneally administered at the dose of 100 mg/kgbw of the mice [7]. The results of measurement of blood glucose levels in mice can be seen in Table 1 and Figure 1.

**Table 1. Average blood glucose levels**

Group	Average blood glucose levels (mg/dl)		Average blood glucose level of treatment mice on the day (mg/dl)		
	Initial	Induced	7 <sup>th</sup>	14 <sup>th</sup>	21 <sup>st</sup>
Control	81.6	-	108.4	141.8	146.8
STZ	83	223	250.2	240.4	248
Extract	85.6	210.8	117	96.4	82.2

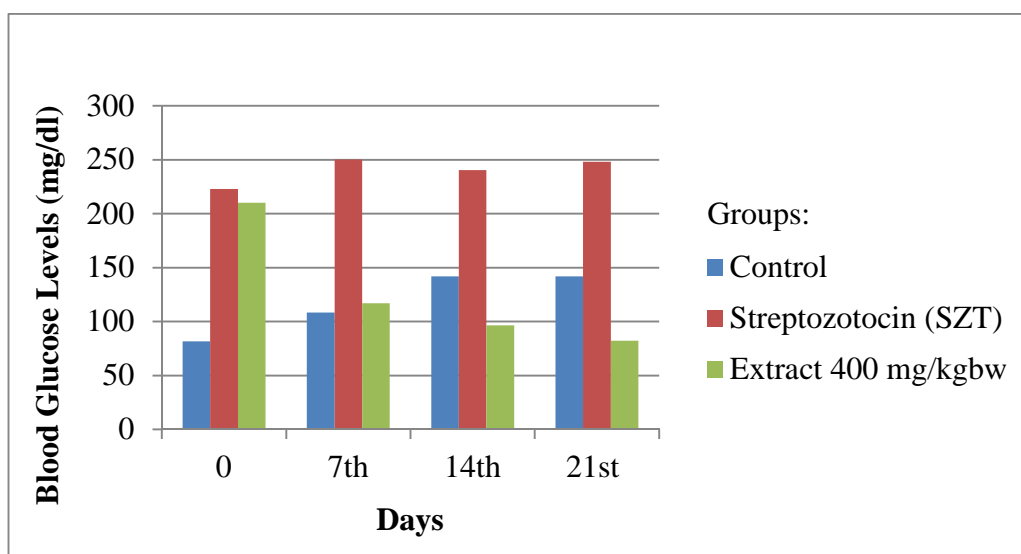
**Figure 1. Blood glucose levels vs time (day)**

Table 1 and Figure 1 show that the control group experienced a rise in blood glucose level from 81.6 mg/dl to 108.4 mg/dl, 141.8 mg/dl, 146.8 mg/dl on the day 7<sup>th</sup>, 14<sup>th</sup>, and 21<sup>st</sup> respectively. The increase is still in the normal range of blood glucose levels in mice and allegedly caused by factor of food consumed. The Streptozotocin-induced group where no extract therapy given showed the blood glucose levels remain high from the day 7<sup>th</sup> to the day 21<sup>st</sup>. The level of blood glucose in mice has decreased in group of ethanol extract of herb *Passiflora foetida* Linn at dose of 400 mg/kgbw on the day 7<sup>th</sup>. The drop continue on the day 14<sup>th</sup> and close to normal level on the 21<sup>st</sup> at value of 82.2 mg/dl. The blood glucose level has improved to near normal level allegedly due to antioxidant compounds within *Passiflora foetida* Linn extract. Statistical analysis showed that the control group and STZ group were significantly different ( $p < 0.05$ ). The SZT group showed significantly different ( $p < 0.05$ ) from extract dose of 400 mg/kgbw in mice.

**CONCLUSION**

*Passiflora foetida* Linn extract at the dose of 400 mg/kgbw of mice can lower blood glucose level.

**Acknowledgement**

This research project was supported by grant from Directorate General of Indonesian Higher Education.

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