

CHAPTER I

INTRODUCTION

1.1 Background

Diabetes mellitus (DM) is a group of metabolic diseases characterized by high blood sugar levels (hyperglycemia) that occurs due to abnormal insulin secretion so that the pancreas cannot produce enough insulin or the body cannot use existing insulin (Azitha, *et al.*, 2018). The word diabetes is meant to flow continuously mellitus is interpreted as sweet which is called diabetes because of drinking a lot (polydipsia), often passing urine (polyuria). Called mellitus because the patient's urine contains sugar (glucose). Healthy people's glucose levels during fasting around 80-100 mg / dl and below 140 mg / dl at two hours after eating (Krisnatuti, M.S, *et al.*, 2014). According to WHO 2018, Indonesia is ranked 6th in the world and is expected to increase significantly to 21.3 million in 2030. One of the consequences of DM occurs because insulin work is not optimal.

Insulin is released by beta cells found in the gland of the pancreas. Insulin is interpreted as the entrance of glucose into cells to be converted into energy. If insulin does not work optimally, glucose cannot enter the cells, as a result glucose will remain in the blood vessels and eventually blood sugar levels increase. An increase in chronic blood sugar due to both absolute and relative insulin deficiency that will cause Diabetes Mellitus will cause symptoms such as: frequent urination, constant thirst, rapid hunger, weight loss and weakness. The way to diagnose diabetes mellitus is to get fasting blood sugar levels of more than 140mg / dl or 150mg / dl on two or more hours of examination (Syauqi, 2015).

One of the methods used to control diabetes mellitus is by controlling blood sugar and eating arrangements. Which is a balanced menu of foods and in accordance with energy needs so as to achieve and maintain normal body weight and well controlled blood sugar levels. Glycemic index serves

to provide information to patients, making it easier for patients in the selection of food (Tandra, 2017). The glycemic index is a number that shows the potential for an increase in blood sugar from carbohydrates available in a food or simply can be said to be a food that contains a low glycemic index (Sunarti, 2017). Sugar is one of the main energy sources in humans. It is a simple carbohydrate that can be broken down very quickly by the body due to easily digested. Diabetics must limit their consumption of sugar due to maintaining normal glucose levels (Lean, 2013).

Aloe vera leaves contain chemical substances which have the effect of reducing blood sugar levels including chromium and alprogen. Nataaloe vera is a low-calorie, non-toxic food so it's good for people who are on a low-calorie diet (Yulianto, 2013). Various kinds of sweeteners have specific characteristics such as the ability to produce distinctive sweetness and in a variety of sugars have different nutritional levels so that it can affect the glycemic index in aloe vera beverages (Estiasih, *et al.*, 2015). Allah commands his people to consume halal food which is better than what is on earth, as in the verse Al-Baqarah verse 168:

يَا أَيُّهَا النَّاسُ كُلُوا مِمَّا فِي الْأَرْضِ حَلَالًا طَيِّبًا وَلَا تَتَّبِعُوا
خُطُواتِ الشَّيْطَانِ ۚ إِنَّهُ لَكُمْ عَدُوٌّ مُبِينٌ

“O people, eat halal better than that which is on the earth, and do not follow the steps of Satan; because indeed Shaitan is a real enemy to you.” (Al-Baqarah; 168)

In Indonesia, there is still little research on the glycemic index in processed aloe vera foods, more research on the function of aloe vera in reducing blood sugar levels. So, encouraging the authors to examine the glycemic index on aloe vera beverages with the addition of palm sugar, stone and coconut sugar. The addition of sugar types is intended to determine the value of the glycemic index on the type of sugar so that it is known the type of sugar that has a low glycemic index so that it is safe for consumption for people with DM.

1.2 Formulation of the Problem

Based on the background description, the research problem can be formulated as follows: Are there any differences in the effect of addition of rock sugar, coconut sugar, and palm sugar on the glycemic index of nata aloe vera beverages?

1.3 Research Purposes

1.3.1 General Purpose

Knowing the effect of adding rock sugar, palm sugar and coconut sugar to the glycemic index value of nata aloe vera beverages.

1.3.2 Special Purpose

- 1 Knowing the difference in blood sugar levels after giving aloe vera beverage with the addition of palm sugar, coconut sugar and rock sugar.
- 2 Identifying the glycemic index in aloe vera beverages by adding palm sugar, coconut sugar and rock sugar.

1.4 Benefits of Research

1.4.1 For Practitioners

This research can provide information to the public about the glycemic index of aloe vera products in order to utilize aloe vera into useful food.

1.4.2 For Academics

- 1 Providing data on the glycemic index of aloe vera beverages with the addition of palm sugar, coconut sugar and rock sugar.
- 2 Find out the difference in blood sugar levels after giving aloe vera beverage with the addition of palm sugar, coconut sugar, and rock sugar.
- 3 Find out the value of the glycemic index on aloe vera beverages with the addition of palm sugar, coconut sugar and rock sugar.

1.5 Authenticity of Research

Table 1 Authenticity of Research

Title	Research Design	Research Result	Research Differences
Glycemic Index (IG) and Glycemic Load (BG) processed by West Kalimantan ethnic fruit Cempedak with vacuum frying technology (Lestari, <i>e</i> , <i>al.</i> ,2017)	Eksperimental	Experimental The research results show that there is a decrease in the value of IG with vacuum frying technology against cempedak. With a fresh glycemic index value of 37 fresh, and 27 crackles.	The dependen variable glycemic index nata aloe vera beverage. The independen variableaddition rock sugar, palm sugar, coconut sugar
The effect of nutritional composition on the glycemic index and glycemic load values of selected emirati food. (Al Daherin, <i>et al.</i> ,2015)	The objective of this study was to assess the effect of the nutritional composition of five commonly consumed traditional Emirati foods on the glycemic index (GI) and glycemic load (GL) values.	The corresponding GI values were high: 71.7, 99.4, 99.2, 84.6, and 71.9, respectively. The GL values of the foods tested were also considered high, varying from 35.85 to 49.7.	The dependen variable glycemic index nata aloe vera beverage. The independen variableaddition rock sugar, palm sugar, coconut sugar
Analysis of glycemic index of “Gula Semut” throught blood glucose level test. (Winarni, <i>et al.</i> ,2018)	This study uses the design of one shot case study using 5 subjects selected consecutive sampling.	The results of the calculation show that the glycemic index of gula semut is low, which is 39%.	The dependen variable glycemic index nata aloe vera beverage. The independen variableaddition rock sugar, palm sugar, coconut sugar