

CHAPTER 1

INTRODUCTION

1.1 Background of Research

Hypertension is a condition of an increase in blood pressure which gives a continuous symptom to a target organ of the body resulting in more severe damage such as a stroke (occurring in the brain and impacting high mortality), coronary heart disease (occurs in damage to the heart blood vessels) and ventricular narrowing left / left chamber (occurs in the heart muscle). In addition to these diseases, hypertension can also cause kidney failure, other vessel diseases, diabetes mellitus and others (Aris, 2017). Hypertension or better known as high blood pressure is a condition where there is an increase in blood pressure above the normal threshold 120/80 mmHg. The blood pressure is still considered normal less than 120/80 mmHg. If the blood pressure is more than 140/90 mmHg hypertension diagnose is stated (the limit is for adults over 18 years) (Afdhal, 2016).

The incidence of hypertension tends to increase recent year in Indonesia. According to the 2019 basic health survey, the prevalence of hypertension in Indonesia has reached 34.1% of the total adult population, and for East Java it has reached 35% (Riskesdas, 2019). Common causes of hypertension include atherosclerosis (thickening of the arterial wall that causes loss of blood vessel elasticity), heredity, increased blood pumped to the heart, kidney disease, adrenal and sympathetic nervous system, obesity, psychological stress, stress and tension can cause hypertension (Afdhal, 2016).

Some of the factors causing hypertension can be modified, one of which is the factor of incorrect food consumption, like junk food consumption habits and preserved food. One food that can reduce blood pressure is corn silk. Corn silk is considered as a household waste whose utilization which has not been maximized, even corn silk has potential as a

functional food. Corn silk is the stem of the pistil on the female flower of the corn plant. Corn silk is located in the middle of the corn stalk in the leaf armpit. Corn silk extends to the end of the corncob and comes out of the cob. Corn silk has a variety of colors according to the variety. Corn silk is often known as *Stigma maydis* (Fajar, 2016).

Corn silk contains antioxidants such as saponins, tannin substances, flavonoids, beta-carotene, essential oils, fatty oils, allantoin, and bitter substances (Hendra & Putra, 2015). In human, antioxidant can protect cells from the dangers of reactive oxygen free radicals. Corn silk also contains maysin, beta-sitosterol, geraniol, hordenin, limonene, menthol, and vitexin, which among them function as blood pressure-lowering substances (Anas, 2018). Antioxidant is chemicals that help protect the body from damage to cells by free radicals. Antioxidant is natural nutrients found in certain fruits and vegetables, and have been shown to protect human cells from oxidative damage and provide other benefits (Fajar, 2016).

The mechanism of action of flavonoids to promote blood circulation and prevent blockages in blood vessels, so that blood can flow normally. Flavonoids also reduce fat deposits in blood vessel walls (Awaluddin & Aminah, 2018). The unpleasant taste in corn silk herbal drinks can be minimized by adding natural sweeteners. Natural sweeteners are sweeteners made from natural ingredients, like granulated sugar. The combination of corn silk and natural sweeteners is expected to be able to create herbal drinks that can be consumed by the human and provide health benefits. Based on this background, the researcher conducted a study entitled "The Effect of Corn Silk Herbal Drinks on Blood Pressure"

1.2 Formulation of the Research

The formulation of the problem in this study is:

1. Is there any effect to blood pressure after drinking corn silk herbal beverage?
2. Is there a difference blood pressure before and after consume corn silk herbal drinks with several variations?

1.3 Purpose of the Research

1.3.1 The main purpose:

To understand affect of corn silk herbal drinks to blood pressure

1.3.2 The spesific purpose:

1. Understanding and analyzing blood pressure before and after treatment corn silk herbal drinks with several variations.
2. Understanding and analyzing diferreces of varianstrietment corn silk herbal drinks to blood pressure.

1.4 Benefit of Research

1.4.1 For Academic

- a. Adding new insight into making herbal drinks from corn silk.
- b. Giving a new source of information to increase the knowledge of Darussalam University students
- c. Giving a basis or recommendations for further research.
- d. Providing information about the benefits of corn silk for reducing levels of hypertension.

1.4.2 For Practice

- a. As a development method of processing herbal drinks with corn silk as the basic ingredients.

1.5 Authenticity of Research

Table 1Authenticity of Research

No	Title	Variable & Design	Result	Difference
1.	The effect of infusion of combination kernel and silk of corn (<i>Zea mays L</i>) as antihypertensive to male rats (<i>Rattus norvegicus</i>) with tail cuff non invasive method (Hendra& Putra, 2015)	Dependent variable : male rats (<i>Rattus nervogus</i>) blood pressure Independent variable : Rats divided to 3 experimental groups which is group infusion of a combination kernel and silk of corn(50:50) with 5 mg/gram dosage, the comparison group that given Furosemide 45.75 mg/50 mL and negative control group as placebo. Design : Experimental with pre-post control group	Infusion of a combination kernel and silk of corn (50:50) giving the effect systolic blood pressure reduction equal to furosemide ($p>0.05$), but the effectiveness was more higher than diastolic blood pressure reduction ($p>0.05$)	The dependent vaiable does independent variable does not discuss about making corn silk herbal drinks method
2	Antihypertensive Effects of Ethanol Extract on Combination of Hair and Corn Seeds (<i>Zea mays L.</i>) in Hypertensive Mice Induced by Monosodium Glutamate(Anas, 2018)	Dependent variable : Male rat galur Wistar Blood Pressure Independent variable : Hypertensive rats in Group I treated with CMC-Na 0.5% 12.5 mL/kg BW/day and group II treated with Furosemide 5.04 mg/kg BW/day. Meanwhile, group III, IV and V treated with SSC-EE (125, 250 and 500) mg/kg BW/day. Design : Experimental with pre-post control group	SSC-EE 500 mg/Kg BW/day decrease the systolic and diastolic blood pressure of 20.04 mmHg and 13.16 mmHg, respectively.	independent variable does not discuss about making corn silk herbal drinks method
3	The Effect of Corn Cob and Corn Silk (<i>Zea mays L.</i>) Decoction on The Normal Blood Pressure in Adult Female (Supriadi, 2019)	Dependent variable : Adult women blood pressure Independent variable : The systolic and diastolic blood pressure of 30 adult female were measured before and after drank corn cob and corn silk decoction Design : real experimental method with a complete randomized design	The average of blood pressure after drank corncob and corn silk decoction was 90,10 / 65,40 mmHg, lower than before drinking the decoction, which was 100,70 / 69,10 mmHg ($p = 0,000$)	The independent variable does not discuss about making corn silk herbal drinks method