CHAPTER I

INTRODUCTION

1.1. Background of The Research

Indonesia is a country with a high level of vulnerability. Indonesia is in the third world ranks as a disaster-prone country after India and China (BNPB, 2013). According to Indonesia's disaster statistics in 2016, there have been 2.342 natural disasters in Indonesia. There are 368 people died, 2.421.162 victims suffered and displaced (BNPB, 2016). *Badan Nasional Penanggulangan Bencana* (BNPB) reported at the beginning of 2017 until 4 December 2017 there have been around 2.175 disasters in Indonesia (BNPB, 2017).

From January to March 2018, *Badan Nasional Penanggulangan Bencana* (BNPB) reported that there are 513 catastrophic incidents with tornadoes and floods which became the majority of disasters in Indonesia. As a result of the disaster, 72 people died and disappeared, 116 people were injured, and more than 393 thousand were displaced and suffered. The total of 12.104 damaged houses included 1.566 heavily damaged houses, 3.141 moderately damaged houses and 7.397 lightly damaged houses (BNPB, 2018). Many natural disasters was occured every year. According to Hadits of Muslim | Musnad Abu Hurairah Radliyallahu 'anhu. Rasulullah SAW said :

عَنْ أَبِي هُرَيْرَةَ قَالَ قَالَ رَسُولُ اللَّهِ صَلَّى اللَّهُ عَلَيْهِ وَسَلَّمَ مَنْ نَفَّسَ عَنْ مُؤْمِنٍ كُرْبَةً مِنْ كُرَبِ الدُّنْيَا نَفَّسَ اللَّهُ عَنْهُ كُرْبَةً مِنْ كُرَبِ يَوْمِ الْقِيَامَةِ وَمَنْ يَسَّرَ عَلَى مُعْسِرٍ يَسَّرَ اللَّهُ عَلَيْهِ فِي الدُّنْيَا وَالْآخِرَةِ وَمَنْ سَتَرَ مُسْلِمًا سَتَرَهُ اللَّهُ فِي الدُّنْيَا وَالْآخِرَةِ وَاللَّهُ فِي عَوْنِ الْعَبْدِ مَا كَانَ الْعَبْدُ فِي عَوْنِ أَخِيهِ

From Abu Hurairah he said: The Prophet Muhammad Sallallahu' alaihi wasallam said

> "*Whoever facilitates a difficulty from his fellow Muslims in the world Allah SWT will make it easier for him in the world and the hereafter. And whoever covers the shame of his fellow Muslims, Allah SWT will cover his shame in the world and the hereafter. And Allah SWT will always help a servant as long as the servant wants to help his brother."* (HR. Muslim, Abu Daud, Tirmidzi, Nasai dan Ibnu Majah)

From this hadith Allah SWT commanded us as Muslims to help each other; like in natural disaster, many disaster victims need our help. The effect of the disaster, they did not have access to sufficient their daily need, especially food, clothing, clean water, and shelter. In emergency conditions, first aid in food security for disaster victims is the priority. Then needed a food design for disaster with rapid handling (BNPB, 2016). Disaster victims are very susceptible to disease like due to lack of energy, protein, lipid and carbohydrate intake as forming energy substances and replacing damaged cells. Lack of access to food and clean water is a problem for disaster victims. Therefore, emergency food is urgently needed by disaster victims to sufficient their needs of daily nutrient intake (Hermayanti *et al*., 2016).

According to Indonesian Ministry of Health (2001) in charge of insufficient food supplies, it is the beginning process of decreasing health status which in the long run will directly affect the fulfillment of the nutritional needs of disaster victims (Anandito *et al.*, 2016). Food bar can be an alternative emergency food option that can overcome technical obstacles like access to clean water, cooking utensils, and other food is minimal and difficult. Thus, emergency food is the main solution to overcome these obstacles. So, the survival of refugees depends on emergency food available. With several supporting criteria there are sufficient their daily nutrient needs, long shelf life, the condition is ready to eat and easily distributed (Ekafitri and Isworo, 2014).

يَا أَيُّهَا النَّاسُ كُلُوا مِمَّا فِي الْأَرْضِ حَلَالًا طَيِّبًا وَلَا تَتَّبِعُوا خُطُوَاتِ الشَّيْطَانِ ۚ إِنَّهُ لَكُمْ عَدُوٌّ مُبِينٌ (١٦٨)

> *"O humanity, eat from whatever is on earth [that is] lawful and good and do not follow the footsteps of Satan. Indeed, he is to you a clear enemy."* QS Al Baqarah [1]: 168.

Based on the verse of Quran, Allah SWT has commanded us to consume and make a halal and good food or drink, stay away from using food ingredients that Allah SWT forbids, and it is good for the public's welfare. One of them is good for the health of the human body, by utilizing what Allah SWT has created.

According to the data from *Badan Pusat Statistics* (2012) rice harvest was approximately 69 million tons, then milled rice ranged around 115 million tons, so the bran produced in 2012 was 9.2-12.5 million tons. From these data, it was concluded that the availability of bran material is sufficient to be a business opportunity and the amount will increase along with rice production (Pratiwi, 2013). After increasingly advanced technological developments, the utilization of rice bran was widely used in various industry. Usually, brown rice bran was processed into flour. The advantages of flour products, they can be stored for a long term, easily mixed, easily formed and easily processed into processed products (Yunani, 2017).

Indonesia is rich in legumes, including jack bean (*Canavalia ensiformis L*) seeds. Utilization of jack bean (*Canavalia ensiformis L*) legume is very minimal, but this plant has nutrient content similar to soybean (*Glycine max*). So, it was used as a substitute for soybean (Wahjuningsih and Saddewisasi, 2013). It was related to soybean exporters which decreased by 5.92% /year during the period 1961 - 2012 then abridge to private importers import soybeans, so the volume of soybean imports tends to increase because soybean price in international markets is lower (Aldillah, 2015).

Besides being easily cultivated, compared to soybeans, the selling price is relatively cheap, and the availability of jack bean (*Canavalia ensiformis L*) seeds in Indonesia is high. Especially in Central Java Province, it is quite good because it was cultivated in 12 districts with yields of ± 216 tons each from a total land area of 24 hectares. It has high potential became a product with high-nutrition, and high economic value. Economically, jack bean (*Canavalia ensiformis L*) has a high added value of 80%. So, the development of jack bean (*Canavalia ensiformis L*) flour needs to be done (Wahjuningsih and Saddewisasi, 2013). Based on the result of Kalaminasih (2013), the protein content of jack bean (*Canavalia ensiformis L*) reaches 30.36% which is not much different from soybean protein as much as 35%. Emergency food formula in the form of food bar made from white millet flour and red bean flour with a comparison composition of 15 g white millet flour, 10 g red bean flour, 2 g sugar, 10 g butter, 13 g full cream milk and 6.043 g water. For macronutrient content according to the standard of Zoumas *et al.* (2002), there are in 100 g food bar contained 16.45% water, 1.45% ash, 10.99% protein, 35.39% fat, 42.26% carbohydrate, aw value 0 , 81 and calories 233.80 kcal / bar (Anandito *et al*, 2016).

Based on the results of Kusumastuti and Ayustaningwarno's research (2013), the substitution of brown rice bran flour for the nutritional content of *tempeh* sausage, there was an increased level of protein, lipid, carbohydrate and fiber in the results of the linear analysis. As much as brown rice bran gave, the nutritional content of *tempeh* sausage tends to increase. Strengthened by the nutritional content of brown rice bran which has an average water content of 12.23 %, protein 15.09%, lipid 16.62%, ash 8.95% and carbohydrate 47.11% (Yunani, 2017). Based on the results of Rahardjo's *et al.,* (2018) the addition of large amounts of bran flour can cause a slightly bitter after taste. Addition of sugar can give a sweet taste and can improve the texture of the product. And the use of milk powder and butter can provide milky aroma and buttery and increase acceptance, especially flavor (Pertiwi, 2018). According to Ferawati (2009) sugar, milk

and butter are the basic ingredients supporting the manufacture of the food bar.

So far, there has been no research for made a food bar from brown rice bran flour and jack bean (*Canavalia ensiformis L*) flour. Therefore a study was conducted on the combined effect of brown rice bran and jack bean (*Canavalia ensiformis L*) flour on the macronutrient content and the acceptability of a food bar as emergency food.

1.2. Statement of The Problem

1.2.1. Is there a combination effect of brown rice bran and jack bean (*Canavalia ensiformis L*) flour to qualify macronutrient content of food bar as emergency food?

1.2.2. Is there a combination effect of brown rice bran and jack bean (*Canavalia ensiformis L*) flour for the acceptability of food bar as emergency food?

1.3. The objective of The Research

1.3.1. General Purpose

Analyzing the combination effect of brown rice bran flour and jack bean (*Canavalia ensiformis L*) flour on macronutrient content and the acceptability of food bar as emergency food.

1.3.2 Special Purpose

1. Analyzing the combination effect of brown rice bran flour and jack bean (*Canavalia ensiformis L*) flour to qualify macronutrient content of food bar as emergency food.
2. Analyzing the combination effect of brown rice bran flour and jack bean (*Canavalia ensiformis L*) flour for the acceptability of food bar as emergency food.

1.4. The benefit of The Research

1.4.1. Theoretical Benefit

1. It is expected to provide useful scientific information for the development of food science and technology, especially regarding using of a combination brown rice bran flour and jack bean (*Canavalia ensiformis L*) flour in the manufacture of processed products.
2. It is expected to improve information and knowledge insights in the development of research in various fields of science, especially the advancement of information and knowledge regarding food science and technology.

1.4.2 Practical Benefit

It is expected to be able to provide information on the opportunities for using brown rice bran and jack bean (*Canavalia ensiformis L*) in making several processed products. Becoming an additional innovation in the manufacture of a product, increasing economic value especially in using of jack bean (*Canavalia ensiformis L*) seeds, providing alternative solutions from using wheat flour to brown rice bran flour and jack bean (*Canavalia ensiformis L*) flour in the manufacture of processed food products.

1.4.3. Previous Research

Several previous studies that were carried out relating to the combination effect of brown rice bran and jack bean (*Canavalia ensiformis L.*) flour on the macronutrient content in the manufacture of food bar as emergency food was presented in the following table :

Table 1. Previous Research

Researched	Research Variable	Research result	Research differences
Kusumastuty et al (2015). Formulation of Rice Bran Flour and Corn Flour as Emergency Food Product.	The dependent variable is an emergency food formula in the from of a food bar. Independent variables are bran flour and corn flour. Methods : Kruskal Wallis test and Man Whitney test.	Research result showed that the food bar formulation made from bran flour and corn flour was not different from the protein nutritional quality parameters (p = 0.187), fat (p = 0.852), carbohydrate (p = 0.114), but gave a significant difference to the organoleptic quality parameters (p = 0.004), aroma (p = 0.016), texture (p = 0.005), color (p = 0.004).	The independent variable used is a combination of brown rice bran flour and jack bean (*Canavalia ensiformis L*) flour in making a food bar as emergency food. Method: one way ANOVA.
Wahjuningsih dan Saddewisasi (2013). Pemanfaatan Koro Pedang Pada Aplikasi Produk Pangan Dan Analisis Ekonominya.	The dependent variable is the HCN content of FAO standard jack bean meal, the potential of jack bean to be brownies and crackers, and economic analysis of jack bean flour. Independent variables are physical, chemical and combination of jack bean (*Canavalia ensiformis L*). Method: one way ANOVA.	The results of this study indicate that the best reduction treatment for reducing HCN content of jack bean is blanching, followed by soaking using 5% salt for 24 hours, a combination of 25 grams of jack bean and 100 grams of tapioca to produce the most popular taste and texture and the texture of brownies made using jack bean to 100% is no different from brownies made with 100% wheat flour, economically the jack bean has a high added value of 80%.	The dependent variable used is the macronutrient level of food bar as emergency food. The independent variable used is a combination of brown rice bran flour and jack bean (*Canavalia ensiformis L*) flour in the manufacture of the food bar.

Kusumastuti dan Ayustaningwarno (2013). Pengaruh Penambahan Bekatul Beras Merah Terhadap Kandungan Gizi, Aktivitas Antioksidan Dan Kesukaan Sosis Tempe.	The dependent variable is the nutrient content, antioxidant activity and the preference for tempeh sausages. The independent variable is the addition of brown rice bran to tempeh sausages. Method: one way ANOVA.	The results of this study indicate that the greater the percentage of the addition of brown rice bran, protein, fat, carbohydrate, fiber and antioxidant activity of Tempe sausage is increasing. The highest levels of protein, fat, carbohydrate, fiber and antioxidant activity of Tempe sausage were found in Tempe sausages with the addition of 10% bran. However, the greater the percentage of the addition of brown rice bran, tempeh sausages tends to be disliked by panelists.	The dependent variable used is the macronutrient level of food bar as emergency food. The independent variable used is a combination of brown rice bran flour and jack bean (*Canavalia ensiformis L*) flour in the manufacture of the food bar.
Anandito, *et al*., (2018). Formulation of Food Bar Made from white Millet Flour (*Panicum miliaceum L*) and Red Bean Flour (*Phaseolus Vulgaris L*).	The dependent variable is an emergency food formula in the form of a food bar. Independent variables are white millet flour and red bean flour, with Intermediate Moisture Food (IMF) technology. Method: one way ANOVA.	The results showed that the formula food bar with the highest level of consumer acceptance in the composition of 15 g white millet flour, 10 g red bean flour, 2 g refined sugar, 10 g butter, 13 g full cream milk and 6,043 g of added water. In 100 g of the food bar contained water, ash, protein, fat, carbohydrate, aw value and calories in a row amounting to 18.45%, 1.45%, 10.09%, 35.39%, 42.28%, 0.81 and 233.80 kcal/bar.	The independent variables used were brown rice bran flour and jack bean (*Canavalia ensiformis L*) flour.