

CHAPTER I

INTRODUCTION

1.1 Background of Research

Based on data from Nielsen 2014, yoghurt consumption rate in Indonesia is very low when compared to other Asian countries. It was ten times lower than in Thailand, 12 times lower than in China, and 30 times lower than in Japan. We assumed that it could be caused by people who are lactose intolerance it is a condition that the body is unable to produce the lactase in sufficient amount to hydrolyze lactose (Padghan, 2015).

Many people have learned that probiotic product as a functional food is useful for intestinal health and can combat pathogenic bacteria in the gut. There are varieties of probiotic products found in the market, includes yoghurt (Makanjuola, 2012). Yoghurt is generally made from fermented cow milk. This biotechnology product is often used to suppress the growth of pathogenic bacteria in the intestines, lower risk of cancer or tumours in the gastrointestinal tract, prevent hypercholesterolemia and stimulate the nervous system and the digestive tract faecal excretion (Kumalasari & Al-Baarri, 2013).

Another functional food which has prosperous nutritional value is sweet corn commodity. Certain communities in Indonesia consume it as a staple food. However it's utilization is unoptimal (Krisnamurti, 2010). According to Badan Pusat Statistik in 2015, sweet corn crop in Indonesia, especially in East Java is higher among provinces approximately 6,131,163 tons. Therefore, sweet corn is still potentially utilized. Affirmed that Indonesian sweet corn production is high, but the commodity is underutilized properly. People only consume it as boiled sweet corn, charcoal roasted corn and prepared vegetable. The advantage of choosing sweet corn is affordable price and sweet taste compared with usual corn (Nuril, 2014).

The substitution of sweet corn in yoghurt recommended to maintain the healthy skin and to prevent cardiovascular diseases (Lestiyani, 2013). The benefits contained in sweet corn consumption are, support the children growth, because it contains vegetable oil and source of omega-6 fatty acid. It's also there's rich of folic acid that able to reduce homocysteine in the blood vessels. Vitamin B1 composition in it is useful for brain health (Sukarni, 2013) and can improve nutrition such as carbohydrates, vitamin and proteins (Etiyati, 2010). Sweet corn contains high carbohydrate and reducing sugars and has potential to make yoghurt (Setyani, 2011).

In the study conducted by Widiani (2017), showed that carbohydrates, proteins and vitamins are nutrients required for the growth of lactic acid bacteria. Therefore sweet corn can be proceed in yoghurt substitution from the fermentation by using lactic acid bacteria. We already know some lactic acid bacteria, like *Lactobacillus bulgaricus*, and *Streptococcus thermophilus* can convert sucrose and fructose into lactic acid. During fermentation process, lactose is broken down by lactic acid bacteria into lactic acid, diacetyl and CO₂ to produce milk with the acid aroma, fresh and lower viscosity than cow's milk yoghurt (Setiawati, 2011).

The lactic acid produced during the process fermentation can increase flavor, and the acidity or pH degrade. Formation of lactic acid and lactic acid bacterial metabolite affect the yoghurt flavor (Jannah *et al*, 2014). This research aims to determine the difference percentage of sweet corn extract substitution in the production of yoghurt that will make a difference in the characteristics of yoghurt; then this research was conducted.

1.2 Statement of the Problem

Based on the background above, formulating problems can be: Is there any effect of sweet corn (*Zea mays L. Var. Saccharata Sturtev*) extract substitution on pH value, total lactic acid bacteria and organoleptic properties of yoghurt?

1.3 Objective of Research

1.3.1 General Purpose

Analysing the effect of sweet corn extract substitution on pH, total Lactic Acid Bacteria and organoleptic properties of yoghurt.

1.3.2 Specific Objectives

- a. Analysing the effect of sweet corn extract substitution on pH of yoghurt
- b. Analysing the effect of sweet corn extract substitution on the total lactic acid bacteria of yoghurt.
- c. Analysing the effect of sweet corn extract substitution on organoleptic properties of yoghurt

1.4 Benefits of Research

Research conducted is expected to provide benefits to the community, institutions and individual researchers.

1.4.1 Theoretical Benefits

1. Providing knowledge in the field of food and nutrition in particular and other sciences in general.
2. Providing information about the opportunities for using sweet corn for processed yoghurt products.
3. Obtaining scientific knowledge about the effect of sweet corn extract substitution on pH values, total lactic acid bacteria and organoleptic properties of yoghurt as functional food.

1.4.2 Practical Benefits

This research is expected to increase knowledge about variations in yoghurt processing and variations in the utilization of sweet corn which is rich in benefits as one of the grains written in the Qur'an.

1.5 Authenticity and Formers Research

Table 1.1 Authenticity and Formers Research

Author	Title	Research result
Hafsah dan Astriana (2012)	Pengaruh Variasi Starter terhadap Kualitas Yoghurt Susu Sapi	There was a significant effect on the quality of Yoghurt in giving starter variations
R. Hidayat, Kusrahayu dan S. Mulyani (2013)	Total Bakteri Asam Laktat, Nilai pH dan Sifat Organoleptik Drink Yoghurt dari Susu Sapi yang Diperkaya dengan Ekstrak Buah Mangga	The addition of mango fruit extracts (0, 1, 3 and 5%) had a very significant effect on the pH value and thick texture, whereas the total lactic acid bacteria and acidic taste showed no significant effect.
Nur Wakhidah (2017)	Fresh Milk Yoghurt With Addition Extracts of Ginger Pulp from Destilation Essential Oil	There was an increase in the content of the antioxidant activity, pH and total acid reduction and the viscosity of ginger pulp extract
Fita Finarsih (2014)	Uji Kualitas Yoghurt Susu Sapi dengan Penambahan Madu dan <i>Lactobacillus bulgaricus</i> pada Konsentrasi yang berbeda	On the effect of adding honey and <i>Lactobacillus bulgaricus</i> on the quality of cow milk yoghurt

Research that has been carried out regarding the variation in making milk cow yoghurt with the substitution of sweet corn extract is still not available. Hafsah and Astriana (2012) research found that the effect of different starter variations on the quality of cow milk yoghurt was different from that of Hidayat, *et al.* (2013) was a study that discussed the making of cow milk yoghurt with the addition of mango extract, And there are

some similar studies using cow milk yoghurt, but it's different in some food variations and starter variations. The research that I examined was a study to determine the effect of substitution in cow milk yoghurt with a different percentage of sweet corn extract but the same of yoghurt percentage.