

# CHAPTER I

## INTRODUCTION

### 1.1 Background

Snacking in Indonesia is very prevalent and is very common in the adolescent population of Indonesia. Snacking is defined as the act of consuming foods between meals. The food eaten during snacking can determine whether snacking is beneficial or bad for the body with the latter being most common. Snacking of unhealthy foods usually lead to over consumption and is the primary cause of the increase in overweight and obese youth in Indonesia (Blum *et al.*,2019).

One such fatty and sugary foods that are regularly snacked on are cookies. Cookies are not originally found in Indonesia. However, they have become a go to snack food amongst young people in Indonesia. With most modern bakeries and a majority of the snack food industry selling this product. Regular cookies are known to be quite unhealthy and fatty due to the amount of butter and sugar used in the product. In addition, cookies are low in protein and minerals. The combination of its low protein and mineral content along with its high fat content results in low nutritional value in cookies.

There are many factors affecting the rate in which one individual snacks. But one of the most important factors is satiety. Snack foods that provides a large amount of satiety will help prevent over consumption. A decrease in over consumption is much needed to overcome obesity in Indonesia. Dietary fiber is one such nutrient that can provide foods with considerable amounts of satiety and

can be a major contributor in suppressing over consumption (Njike *et al.*,2016).

Tubers of *iles-iles* (*Amorphallus muelleri*) that is locally available in Indonesia and is mostly made up of a dietary fiber known as glucomannan. This insoluble dietary fiber cannot be absorbed by the body. Therefore, it does not contribute to calories in food. Glucomannan has been known to possess a variety of health benefits with a specific interest on its anti-obesity properties in which it is able to reduce the absorption kinetic of fat (Behera and Ray, 2016). The seeds of jackfruits (*Artocarpus heterophyllus*) are also rich in dietary fiber. However, they are usually thrown as waste. The utilization of these seeds can reduce food waste and also increase food diversity in Indonesia.

Pumpkin or can be known as *Cucurbita pepo*. can be processed to make pumpkin puree. Pumpkin puree Is known to be a good fat replacer, the use of pumpkin puree to replace butter will help reduce the amount of fat in a product (Ogenean *et al.*,2006). In addition, pumpkin is a very healthy vegetable that is eaten worldwide. It possesses a variety of essential fatty acids, micronutrients and vitamins. Most notably zinc, iron and vitamin A (Butool and Butool, 2013).

## **1.2 Research Problem**

Cookies as a very popular snack food with a majority of products in the snack food industry being this product. Thus, cookie have been the primary food product to be snacked on by the general public. Although, cookies are a very good source of energy due to the amount of carbohydrates and sugar present in them. They contain a large amount of fat with most commercial cookies having a fat content of at least 17% (Norhayati *et al.*, 2015). Continuous consumption of cookies may lead to obesity which will lead to more health issues. In addition,

cookies are generally not high in useful nutrients such as protein and minerals. Therefore, its physicochemical properties can be improved on by partial or complete substitution in cookies is the main way to improve the physicochemical properties of cookies. There are many different ingredients that have the potential to be utilized as a flour and fat replacers in cookies. With such ingredients being *iles-iles* and jackfruit flour for partial substitution of flour in cookies and pumpkin puree as a fat replacer in cookies.

*Iles-iles* is primarily made up of a dietary fiber known as glucomannan. This dietary possesses anti-obesity, laxative effects, prebiotic activity, anti-hyperglycemic and inflammatory properties (Chua *et al.*,2010). *Iles-iles* is readily available in Indonesia but do not see much utilization in the food industry. Jackfruit seeds is also a good source of dietary fibers, protein and minerals. Unfortunately, jackfruit seeds are usually discarded. Pumpkin is known to be a good fat replacer (Ogenean *et al.*,2006). But not many studies have been done on the effect of pumpkin puree on the physicochemical composition and organoleptic properties of cookies. The utilization of these ingredients will increase food diversity in Indonesia and will reduce the amount of waste produced (Ho and Latif,2016).

### **1.3 Objectives**

#### **1.3.1 General Objectives**

The general objective of this research was to produce cookies using jackfruit seed flour and purified *iles-iles* flour as a substitution for all-purpose flour and using pumpkin puree as a fat substitute to butter.

### 1.3.2 Specific Objectives

The specific objectives of this research were as follows:

1. To prepare purified *iles-iles* flour, jackfruit seed flour and pumpkin puree and to be utilized in the production of cookies.
2. To determine effect of ratio purified *iles-iles* flour to jack fruit seed flour and pumpkin puree as fat replacer on physicochemical properties of cookies: and then to select three best formulations of cookies.
3. To determine effect of selected formulations on organoleptic properties of cookies.

