

# CHAPTER I

## INTRODUCTION

### 1.1 Background

Cake is one of many foods that is consumed by children to adults. It is basically made from fat such as margarine or butter, wheat flour, eggs, sugar and baked in an oven. In addition to that, cake can be added with other ingredients such as shortening, baking soda, chocolate, and other flavorings. The ration of ingredients between cakes are different, depending on the type of the cake. Generally, cake can be divided into shortened and un-shortened based on the amount of fat used (Manay and Shadaksharaswamy, 2001). Pound cake is a cake traditionally from England. It has a quite compact structure, good flavor, sweet, and delicious (Rahayu, 2010).

However, the amount of fat used in making pound cake is considered to be quite much. Meanwhile, the prevalence of people having hypercholesterolemia is tending to increase globally according to the World Health Organization (WHO, 2015). People are looking for healthier lifestyle and diet nowadays to maintain their cholesterol level. Cholesterol is divided into two types, High Density Lipoprotein (HDL) and Low Density Lipoprotein (LDL). They both have different structures. Unlike the HDL, the LDL can cause heart attacks and strokes hence called as “bad” cholesterol by people and HDL as the “good” cholesterol (Cheung, 2014). LDL is considered as “bad” cholesterol as when LDL oxidized, it can infiltrate the artery lining and makes an accumulation of cholesterol in artery wall which results in atherosclerosis. Margarine or butter intake can generally cause LDL levels to rise

while consuming foods that are low in saturated fat and cholesterol can help in lowering LDL level (Hemat, 2004).

On the other hand, avocado (*Persea americana*) is a fruit that predominantly contains monounsaturated fatty acids. Unsaturated fats, including the monounsaturated fatty acids in avocado, do not raise LDL level (Chow, 2007). Avocado is also known for its buttery texture due to its high fat content which makes avocado to have a potential to substitute or reduce the amount of margarine usage. Avocado has also been successfully replaced up to 50% of fat in oatmeal cookies studied by Wekwete and Navder (2008) and successfully replaced margarine in brownies (Lambertha, 2018) with no significant characteristics on its firmness, volume expansion, L\* value, and °hue with the control brownies and was found to be acceptable. That is why, avocado has a potential to be used to substitute margarine in pound cake making.

## **1.2 Research Problem**

Avocado is a fruit that is beneficial. It has buttery texture and predominantly contains monounsaturated fatty acids unlike margarine or butter which contains a lot of saturated fatty acids. Avocado has been used to partially replace fat. However, avocado has not been used for pound cake. Pound cake is made with several ingredients, including a considerable amount of margarine. It may be good to use avocado to reduce the usage of margarine in pound cakes. That is why, it is needed to study the potential of avocado to be used as a fat replacer by substituting the margarine in pound cake making. It is also important to consider the sensory and physical characteristics by determining the best treatment to use avocado as fat

replacer with different types of flour as well as considering the convenience of the baking methods.

### **1.3 Objectives**

#### **1.3.1 General Objectives**

The general objectives of this research are to study the use of avocado as a natural fat replacer to substitute margarine in pound cake as well as the most compatible flour and baking method to be used with avocado.

#### **1.3.2 Specific Objectives**

The specific objectives of this research are:

1. To determine effect of ratio of avocado fruit puree to margarine on physicochemical characteristics of pound cake baked with a conventional oven or microwave oven and then to determine the best pound cake formulation from each type of flour.
2. To determine effect of selected formulations on chemical and organoleptic characteristics of pound cakes prepared with three type of flours and two baking methods.