

# CHAPTER I

## INTRODUCTION

### 1.1 Background

Durian is known as the most popular seasonal fruits in Southeast Asia, especially in Thailand, Malaysia and Indonesia (Drenth and Guest, 2004). Wai, *et al.* (2009) described durian as fruits with thick, full of spike – like thorns rind in which the edible aril is enclosed. According to Brown (1997), the weight of mature durian fruits on average could reach more than 1 kg. However, the edible part known as arils only contributes less than one third of the total mass. The other 15% is contributed by the seed and the rest is the rind. This statement is supported by Wai, *et al.* (2009) stated that usually more than 50% of the total weight of durian fruit comprises by the rind. As one of the most popular seasonal fruit in Southeast Asia, the wastes from durian consumption are provided abundantly and could even lead to environmental problem.

Oreopoulou and Russ (2007) stated that the most common source of pectin available for commercial scales are citrus peel and apple pomace. However, other sources are also reported to contain pectin fractions. According to Wai, *et al.* (2009), most of plant cells of durian made up from polysaccharides mixtures, which include cellulose, hemicelluloses, lignin, and pectin. Specifically, research conducted by Futrakul, *et al.* (2009) confirmed that pectin is the major component that builds up the water soluble polysaccharide fraction extracted from durian rind. Therefore, the agricultural waste of durian rind can be utilized as an

alternative source of pectin. There are several methods that can be done in pectin production but the most common method to produce pectin is through extraction by using hot aqueous mineral acid (Phillips and Williams, 2000).

Jam is example of product where pectin is mostly applied. Verma and Joshi (2000) estimated that the utilization of commercial pectin applied in the production of jams and jellies reached 80 – 90%. The most popular fruit jam according to the International Jelly and Preserve Association (2010) is strawberry jam. Pradeepkumar, *et al.*, (2008) mentioned that strawberry fruits are highly perishable and jam making is an option that can be applied to preserve the strawberry. Additionally, Ziedrich (2008) stated that strawberry is one example of fruit which pectin content is low and additional pectin is required to produce good jam. Therefore, the application of pectin extracted from durian rind is applied into fruit jam product, specifically strawberry jam.

## **1.2 Research Problem**

Durian rinds, which are considered as agricultural wastes, contain pectin fractions which can be utilized as alternative pectin source. However, the rind consists of polysaccharides mixtures and pectin fractions can be obtained under proper extraction condition. Pectin is mostly applied in jam products, especially in jam which are made from low pectin content fruit, such as strawberry. Jams formulation is very essential since changes in the formulation could lead to changes in the food matrix constituents and eventually changes the characteristics of the jams (Javanmard and Endan, 2010). Therefore, this research was performed

to study the effect of durian rind pectin and strawberry fruit concentration towards the characteristics of strawberry jam.

### **1.3 Objectives**

#### **1.3.1 General Objective**

The general objective of this research is to study the application of durian rind pectin in the making of strawberry jam.

#### **1.3.2 Specific Objective**

The specific objectives of this research are:

1. to extract the pectin fraction from durian rind wastes,
2. to study the effect of durian rind pectin and strawberry fruit concentration towards the characteristics of strawberry jam,
3. to determine the optimum formulation of strawberry jam made from durian rind pectin, and
4. to compare the characteristics of strawberry jam made from durian rind pectin with strawberry jam made from commercial pectin in term of physical, chemical, and sensory characteristics.