

CHAPTER II

LITERATURE REVIEW

2.1 Keluwih

Keluwih is a type of plant that has a hard and thorny skin similar to jackfruit and breadfruit. In Botany, the breadfruit plant belongs to the same variety as the breadfruit, but the difference is that the breadfruit has no seeds, while the breadfruit has seeds. Keluwih (*Artocarpus communis*) is a close relative of jackfruit (*Artocarpus integra*) and cempedak (*Artocarpus champeden*) (Angkasa & Nazaruddin, 1994). The fruit of the keluwih is in the form of bunches, round, short thorns and green in color. Young keluwih seeds are white and when old turn brown and have firm veins, with a seed diameter between 10-20 mm, the dam becomes soft. Fruit production from a single keluwih plant that is not cultivated intensively reaches 250 per year with an average of 30 seeds per fruit. One well-developed keluwih tree can produce about 700 fruits with an average of 60 seeds per fruit. Thus, the fruit production potential is identical to 42,000 seeds per tree (Pitojo, 2005). The results of the research put forward by Pitojo (2005), the protein content in keluwih seeds has a higher amino acid balance than the protein in jackfruit seeds. Keluwih seeds contain elements of potassium, iron, calcium, phosphorus and niacin which are higher in content than those found in nuts. RI Ministry of Health (2009) states that the chemical composition of keluwih fruit contains 27.2 g carbohydrates, 70 g water, 1.5 g protein, 0.3 g fat, 1 g ash, 118 kcal energy, 28 mg calcium, phosphorus 32 mg, iron 0.9 mg, total carotene 20 µg, thiamin 0.1 mg, and vitamin C 19 mg. Keluwih fruit used as flour is a gluten-free flour and has a nutritional content of 8.8% protein, 5.6% total fat, 64.9% total carbohydrates, 8.2% fiber, 1.5% ash, 0.06% phenol, and 10.8% water (per 100 g of material) (Sukatiningsih, 2005). The benefits of this fruit are also many, including maintaining heart health, fighting infection,

preventing diabetes,improving digestion, maintaining healthy teeth and many more.

This keluwih tree is spread in tropical and pacific regions. This keluwih treeis spread in tropical and pacific regions. The tree is about 10 - 15 m high or more. Tree with a height of 10 - 25 m, stem erect, round and gummy, rough surface, brown. Single leaf alternate, oval, pointed tip, incised edge, pinnate leafbones, leaf surface rough green. Single flower found in the axils of the leaves, yellow. Round soft spiny fruit, black kidney-shaped seeds, has a single root (Becker, 1965). Young fruit is usually consumed by cutting it thinly and thenboiling it as a vegetable.



Figure 2. 1 Keluwih Fruit



Figure 2. 2 Keluwih Fruit

2.2 Chicken Noodle

Chicken noodle is popular because it has a good taste and is a favorite food of all people, plus the price is affordable and we can easily find it in every corner of the city. These sellers are often found selling on the side of the road by building stalls or even pushing carts. Those who use carts travel more in several places, or do not stay in one place. From children to the elderly really like this food, especially when consumed in a state that is still hot. According to Hanung Bayu Adji (2017) regarding the origins of the history of chicken noodles, "chicken noodles are food that comes from South China. After the great movement of immigration of Arabs and Chinese in 1870 to Java due to the politics of openness of immigrants from the Dutch East Indies Government, enclaves of foreign eastern residents developed. For the Chinese peranakan, hard work must be replaced by good food and a comfortable life. So from the philosophy of living a good life, eating delicious chicken noodles was born."

Chicken Noodles is one type of food that is popular in the community. Not the same as common types of noodles, but chicken noodles, usually equipped with various types of complementary foods such as minced chicken, quite thick sauce, and mustard greens and so on. For the type of noodles used are noodles with a wet texture and not noodles that use a drying or frying process, as used in instant noodle products.

2.3 Drying Method

According to James C Atuonwu (2011) drying is basically a process of reducing the water content of a material or relatively small separation of the material using heat energy. The result of the drying process is a dry material that has a lower water content. In this drying process, water is evaporated using unsaturated air which is exhaled on the material to be dried. Water (or other liquid) evaporates at a lower temperature than its boiling point due to the difference in the water

vapor content at the solid-gas interface with the water vapor content in the gas phase. The hot gas is called the drying medium, providing the heat necessary for the evaporation of the water and simultaneously carrying the water out. With the aim of drying, namely:

1. Preservation of materials
2. Reduce the cost of material transportation and packaging
3. Facilitate the handling of materials for further processing
4. Get the quality of the desired product results

The drying time depends on the material being dried and the heating method used. The evaporation of water in the material occurs in 3 stages, namely: preliminary heating or adjusting the temperature of the material being dried, drying at a constant rate (Constant Rate Period), and drying at a decreasing rate (Falling Rate Period) (Treyball, 1983).

According to C. J. Geankoplis (1993) drying methods and processes can be classified in many different ways. The drying process can be grouped as:

1. Batch drying is drying where the dried material is put into the dryer and left for a specified time.
2. Continuous drying is drying where the wet material enters continuously and the dry material continuously exits from the dryer. Based on the physical conditions used to provide heat to the system and move water vapor, the drying process can be divided into three, namely:
 - 1) Direct contact drying using hot air as drying medium at atmospheric pressure. In this process the steam that is formed is carried away by the air
 - 2) Vacuum Drying using metal as a heat contacting medium or using radiation effects. In this process the

evaporation of water takes place faster at low pressure

- 3) Freeze drying. Drying involves the sublimation of water from frozen material at very low pressure and produces a high quality product from drying. (Kunal A. Gaidhani, 2015).