

CHAPTER II

LITERATURE REVIEW

2.1 Ingredients Review

2.1.1 Sorghum

Sorghum is a cereal plant that can adapt and grow well in various climatic conditions, such as tropical, subtropical, to desert areas. This plant has many benefits, starting from its seeds which can be used to make flour by grinding it as a substitute for wheat, after which the stems can also produce sap which can be used as sugar and forage for livestock. Sorghum also has high dietary fiber so it is good for the body (Setyanti, 2015).

Sorghum is one variety of cerealia plant with enormous potential for growth in Indonesia due of its widespread adaption. Sorghum can be grown on less productive since it can tolerate less rich soil and crucial land pretty well. Sorghum plants can grow on marginal land, tolerate drought and waterlogging well, and are generally resistant to pests and disease. Like any other plant, sorghum does not require specialized equipment or care. Sorghum should ideally be planted during the dry season to provide the highest yield because it needs full sun for the entirety of its life. (Siregar et al., 2016). Therefore, this plant is highly developed in Indonesia and has the potential to reduce wheat flour imports.

Table 2.1 Nutritional Content of Sorghum Flour

| Nutrient content | Sorghum flour(%) |
|------------------|------------------|
| Protein | 10,11 |
| Fat | 3,65 |
| Coarse fiber | 2,74 |
| Mineral | 2,24 |
| Starch | 80,42 |
| Carbohydrate | 73 |

(Setyanti, 2015).

2.1.2 Wheat gluten flour

Wheat is a grain that has the most protein content compared to other grain seeds. Like other grain seeds, wheat seeds or wheat kernels are typically oval in shape (Wahyuningtias et al., 2014).

In the endosperm of various cereals, including wheat, rye, and barley, there is a protein combination called gluten that is amorphous and mixed with starch. Wheat contains the most gluten of the three. In flour, which is made up of the proteins gliadin and glutenin, the gluten level can approach 80% of the total protein. It expands due to the gluten and the airtight nature of the product (NURLINDA, 2009).

Table 2. 2 Nutritional content of Wheat gluten flour.

| Nutrient content | Wheat gluten flour(%) |
|------------------|-----------------------|
| Protein | 11,6 |
| Fat | 2 |
| Coarse fiber | 1,6 |
| Mineral(ash) | 3,5 |
| Starch | 70 |
| Carbohydrate | 71 |

(Sa'diyah, 2022), (Kim & Kim, 2021)

2.2 Product Review

2.2.1 Gyoza

The gyoza itself is one of very common Japanese dumpling dish. Gyoza is a dish that originated in China and goes by the name of Jiaozi. Jiao's meaning as a horn is derived from the shape of the gyoza, which is horn-like.

Gyoza is also divided into three types, namely:

1. Yaki Gyoza are gyoza that are cooked using the pan-fried method using sesame oil, so only the underside is crunchy while the top is slightly steamed, usually a little water is added and then covered until cooked.
2. Age Gyoza are gyoza that are cooked by deep frying, so they have a very crunchy texture.
3. Sui Gyoza are gyoza that are steamed or boiled and served in soup.

Gyoza are not only delicious, but they are also nutritious because they include protein, vitamins, and minerals in the filling, as well as some energy- and carbohydrate-rich skin. Additionally, gyoza can be modified by using an alternative flour or by replacing the filling with regional fare or nutrient-dense foods. Gyoza is a type of dimsum originating from Japan. Gyoza consists of skin and filling. The skin is made from flour dough, while the filling usually consists of several kinds of ingredients. Gyoza has a variety of fillings, but usually consists of meat, greens, and mushrooms (William & Rinawati, 2020).

Gyoza is usually only a side dish, not a main dish, like in a ramen restaurant that provides gyoza only as a complement.

Based on the product that has been made, there is no significant difference in physical characteristics, between wheat flour gyoza and sorghum flour gyoza, this is indicated by the texture or elasticity of the gyoza skin which is also liked by the panelists, based on sensory evaluation results. There is a slight difference, namely in the skin color

of the sorghum gyoza which is slightly browner, due to the color of the sorghum flour which tends to be browner.

2.3 Process Review

2.3.1 Kneading

One of the most important steps in the creation of dough is kneading. Several factors, including kneading duration, dough temperature, kneading speed, dough aeration, water temperature, and total water content, affect the kneading process. The rheology of the dough and its features can be considerably improved by properly managing the kneading process and using improvement measures (Parenti et al., 2021)

2.3.2 Pasta rolling

The use of a noodle and pasta rolling machine to speed up the manufacturing process, namely from rough dough to thinner and smoother, so that it can be shaped later (Tripayuni, 2021).