

CHAPTER II

LITERATURE REVIEW

2.1 Ingredients Review

2.2.1 Duck Meat

The protein content in duck meat ranges from 18.6-20.1%, while the fat content ranges from 2.7-6.8%. Although the protein composition of duck meat is almost the same as chicken meat (about 20.8%), the fat content in duck meat is twice as high as chicken meat (8.2% and 4.8% respectively). Even so, the fat content in duck meat is still much lower than that of ruminants such as beef (17%), lamb (22.4%), and pork (32%). Manila ducks have the genetic ability to become meat-producing poultry (Rahman & Ismanto, 2020).

Duck meat has a higher percentage of fat compared to other types of poultry such as chicken or turkey. This is due to the higher levels of lipids and oxidative energy metabolism in duck meat. A study shows that the higher the fat content in duck meat, the stronger the taste of the meat. However, it should be noted that the higher fat content in duck meat can make the meat more easily oxidized compared to chicken meat. Even so, duck meat is a good source of polyunsaturated fatty acids, especially those consisting of 20 and 22 carbon atoms. The main fatty acids in liver and breast meat and duck legs are C16:0 (18-22%), C18:0 (12-22%), C18:1 (17-34%), C18:2 (13-23%)) and C20:4 (8-19%) (Cobos et al., 2000). In duck meat, the fatty acid content of C14:0, C16:0, C16:1, C18:2 and C18:3 was significantly higher, while C18:0 was significantly lower than chicken meat (Biswas et al, 2019).

2.2.1 Tapioca flour

In making meatballs, tapioca flour is selected based on its high starch content. The starch functions as a binder in the meatballs so

that the meatballs have a chewy texture and don't crumble easily when cooked. In addition, duck meatballs that use tapioca flour have a stronger and more savory aroma so that they can increase the appetite of the connoisseurs. Tapioca flour itself comes from cassava starch granules which are rich in carbohydrates. With a high amylopectin content, tapioca flour has the properties of not easily agglomerating, high adhesion, not easily broken or damaged, and relatively low gelatinization temperature between 52-64. Tapioca flour is usually used as a binder in making meatballs, and has a nutritional content per 100-gram sample, namely:

1. Calories: 362
2. Water: 12.9%
3. Carbs: 88 grams or 6.99%
4. Protein: 0.2 gram or 0.59%
5. Fat: 0.2 grams 3.39%
6. Fiber: 0.9 grams
7. Sugar: 0.3 grams
8. Calcium: 16 mg
9. Iron: 0.2 mg
10. Sodium: 1 mg

The use of binders aims to assist the gelatinization process to produce products with good sensory value and can affect the nutritional composition of the resulting nuggets (Bulkaini et al, 2020).

2.2 Product Review

The choice of this recipe was based on the aim of creating innovations by using duck meat which is rarely used as a processed ingredient. Pureed duck meat, otherwise known as ground duck meat, is used as the main ingredient in making duck meatballs. An explanation of the reasons, advantages, features, and disadvantages of using this material is as follows:

1. Reason:

- The use of duck meat as the main ingredient in meatballs can provide unique variations of taste and texture compared to the use of other meats such as chicken, beef or pork. Duck meat has a bolder and richer taste compared to some other meats. This can give a new dimension to the taste of meatballs, with a touch that is sharper and more complex. In addition, duck meat tends to have a denser and crunchier texture compared to some other meats which are more tender. This will give the meatballs a richer texture, with a more mouth-watering chunk of meat.
- Duck meat is rich in protein, so meatballs made from this material can provide good nutrition for the body (Rahman & Ismanto, 2020).

2. Superiority:

- The savory and delicious taste of duck meat can enhance the taste of the meatball.
- The slightly chewy and tender texture of duck meat has the potential to give a special sensation when chewed. This can be one of the characteristics that distinguishes duck meatballs from meatballs that use other meats. The combination of suppleness and tenderness in the duck meat creates an interesting feeling when chewed. The chewiness of the texture provides a light and pleasant resistance when the teeth interact with the meat, while the tenderness provides a soft and comfortable sensation. The combination of suppleness and tenderness in duck meat can give a psychologically satisfying feeling. This combination creates more complex and varied sensations, triggering feelings of pleasure and satisfaction when consuming a dish.
- Duck meat has a lower fat content than beef or pork, so duck meatballs can be a healthier option, but it depends on the fat ratio you use for the ground meat.

- Can be stored in the freezer and can be processed into a variety of dishes.
3. Privileges:
- The use of duck meat as the main ingredient can provide different menu variations from the usual meatballs that use beef or pork.
 - Duck meat also contains nutrients that are good for the body, such as B vitamins and iron.
4. Weakness:
- Duck meatballs tends to be more expensive than beef or chicken meatballs.
 - Not everyone likes the distinctive taste of duck meat, and the presence of a slightly higher percentage of ash resulting from the use of tapioca flour causes the duck meatballs to become saltier after heating so their use as the main ingredient may not be suitable for everyone (Putra et al, 2011).

Such is the explanation of the reasons, advantages, features, and disadvantages of using ground duck meat as the main ingredient for duck meatballs.

2.3 Process Review

In general, the method for making ground duck meat into meatballs will go through several basic stages, namely:

1. Blending: Blending the aromatic such as garlicks and shallots with baking powder, seasoning and some of the ice cube.
2. Grinding: Grind the duck meat using meat grinder or a blender
3. Mixing: The ingredients that have been processed are mixed with the remaining ingredients like tapioca starch, egg, and ice cubes evenly using a stirrer or hand.

4. Shaping: Shape the meatballs dough into balls formation using hand and spoon.
5. Boiling: Boil the meatballs dough that has been form into a ball in a pot with boiling water.

In this production, the method used is boiling. In hot water treatment, the starch structure will change. Gelatinization of starch is a process by which starch is processed from a fairly soluble semi-crystalline form to a fully soluble form (in this case starch functions as a binder). The function of preheating is to increase the textural strength on the outside of the meatballs so that the meatballs do not break easily when heated at temperatures close to the boiling point of water. After the preheating stage, the heating process will produce a strong final texture of duck meatballs. During the heating process, meat and spices will bind to starch which has been degraded by amylase and amylopectin (Putra et al, 2011).