CHAPTER I

INTRODUCTION

1.1 Background of Study

In recent years, consumer demand for process meat has increased, especially during a pandemic. The request occurred because of the decrease in beef consumption caused by the decline in people's purchasing power decreased people's income and reduced production capacity of breeders (Khotimah and Ulfa, 2022). Health and environmental reasons aside, some people seek alternative meats to avoid food sensitivities or certain religious beliefs. Ground duck meat has become a popular ingredient in many cuisines around the world, especially in Asia and Europe. It is also a great source of protein, iron and other important nutrients.

According to research conducted by (Biswas et al, 2019) eight weeks of age is considered the right time to slaughter meat-producing ducks because at that age the carcass meat content is highest and the ratio of meat to fat is most preferred. Ducks, especially wild ducks, can produce about 74% carcass if reared intensively. However, for Peking ducks, the percentage of carcasses produced was lower, namely around 72% for males and 71% for females. As stated by (Liu et al, 2013), fat oxidation and degradation products are important during duck processing, especially during dry pickling and roasting, because duck has a higher content of unsaturated fatty acids. The development of volatile compounds (compounds that easily evaporate) from raw duck meat at room temperature was analyzed using gas chromatography-mass spectrometry and alcohol techniques. The results of the analysis show that there are several dominant and significant compounds in raw duck meat, namely:

1. 1-hexanol, which provides the floral, herbal, and fragrance often associated with plant essential oils. In the context of raw duck meat, the presence of 1-hexanol can give the meat a certain characteristic aroma.

2. 3-hydroxybutanone also known as acetone, has a characteristic odor and is generally considered to have a sharp chemical odor. In the context of duck meat, the presence of 3-hydroxybutanone contributes to its complex aroma and taste profile.
3. 2-pentilfuran, this compound has a different aroma depending on the isomer and chemical bonds. Common smells associated with this compound are those of chocolate, caramel, and baked goods. In raw duck meat, 2-pentilfuran contributes to the general aroma and taste characteristics.

The main compound in the fraction (part) analyzed is a type of alcohol formed from the aldehyde reduction process. This compound has an important role in giving a "fatty" taste to meat because it is related to the oxidation of lipids (fats) and amino acids. The results of the analysis also showed that the analysis of flavor compounds from duck meat showed differences between older and younger duck meat. The total amount of aromatic hydrocarbons, hexanal, and 2,3-octanedione was shown to be higher in older ducks compared to younger ducks. The presence of a higher amount of total aromatic hydrocarbons in older duck meat could indicate that more chemical or biochemical processes occurred in meat that had been cooked longer. These changes can be related to the formation of new compounds that produce different aromas. An increase in the hexanal content in older duck meat may indicate a chemical reaction that occurred during the process of ripening or breaking down the ingredients in the meat. Meanwhile, the presence of 2,3-octanedione which was higher in older duck meat might indicate a chemical change that occurred during the ripening of the meat. These compounds can contribute to the complex and distinct aromas and flavors of meat that have been cooked longer. Pureed meat product processing methods, in which boiling and steaming are the most frequently used methods. During the manufacturing process, processing with hot water can cause changes in the starch structure. Gelatinization of

starch occurs when starch is processed from a relatively soluble, semi-crystalline form to a fully soluble form (Zhang et al., 2004).

Meatballs, on the other hand, are a versatile dish that can be made with a variety of meats and seasonings. They can be served as a snack, appetizer, or as a main course, depending on the preparation and the accompanying sauce. The idea to use ground duck meat as the main ingredient for meatballs stems from a desire to create a unique and flavorful dish that accentuates the taste and texture of the duck meat. It also aims to offer a healthier alternative to traditional meatballs made from beef or pork, as duck meat is leaner and contains less fat. Additionally, there is a growing demand for more sustainable and ethical food options. Using duck meat as the main ingredient for meatballs could also appeal to consumers seeking more sustainable and ethical food options.

In general, duck meat balls are made by mixing minced duck meat with fillers such as flour, sago flour, bread flour, or potato starch. Once mixed, the dough is usually formed into small balls and then heated or boiled. During the processing of duck meat balls, physical and chemical changes occur in the meat and fillers. Some of the changes that can occur are changes in color, texture, aroma, and taste. The effect of these changes may vary depending on the type of filler used and the processing method used. For example, using bread flour as a filler can produce duck meat balls that are denser and chewier than using sago flour or potato starch. In addition, the use of potato starch as a filler can produce duck meat balls that are more tender and softer. Heating the duck meat balls can also affect the physical and chemical properties of the duck meat balls, such as changing the color and increasing the hardness of the meat balls. Different preheating and heating can produce duck meat balls with different physical and chemical properties. Therefore, it is necessary to select the right materials and processing methods to produce quality meatballs (Putra et al, 2011).

Overall, the creation of Ground Duck Meat as the Main Ingredients of Meatballs offers a unique and flavorful twist on a classic dish while promoting sustainability and health.

1.2 The Objectives of the Study

The objectives of this study are following below:

1. Making new innovations in the use of duck meat as a processed food ingredient, which is rarely used in everyday cooking.
2. Providing healthier alternatives, because the recipes used do not contain artificial preservatives, thereby reducing the health risks that may arise due to consumption of processed foods that contain excess preservatives.
3. Produce meatballs that can be stored in the freezer for a month, so they can be a practical solution for serving dishes quickly and easily.
4. Offers flexibility in processing dishes, because the meatballs produced can be processed into various types of dishes with a variety of spices and different processing methods.