MEAT QUALITY OF NATIVE CHICKEN (Gallus domesticus) WHICH IS GIVEN BANANA PEEL FLOUR (Musa sp) IN RATE

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ABSTRACT

This study aims to determine the quality of free-range chicken meat (Gallus domesticus) given banana peel flour (Musa sp) in the ratio of the pH of the meat, cooking loss, and water content. The research method used was an experimental method with a completely randomized design (CRD) with 3 treatments and 6 replications. The treatment of giving banana peel flour consisted of P0 (100% ration)), P1 (5% banana peel flour 5%), P2 (10% banana peel flour in the ration). The variables observed in this study were the quality of free-range chicken meat including meat pH, cooking loss, and water content. The results of this study indicate that. The addition of banana peel flour in the ration had a significant effect ($P<0.05$) on the pH value of the meat, and gave an insignificant effect ($P>0.05$) on the cooking loss value and water content of native chicken meat. The application of banana peel flour in the ration of free-range chicken can reduce the pH value of the meat but does not reduce the percentage of cooking loss and water content.

Keywords: Native Chicken, Banana Peel, Ration Fee, Meet Quality

INTRODUCTION

Chicken meat is a source of animal food that contains high enough nutrients in the form of protein and energy. The demand for meat tends to increase. This is expected to continue to increase and continue in the future. Factors contributing to the increase in demand for chicken meat are a shift in people's consumption patterns from vegetable protein sources to animal protein sources (Dilago, 2011).

Free-range chicken is a source of animal germplasm that is feasible to be developed. This poultry has promising prospects, economically because it is a highly nutritious food ingredient and the demand is quite high. Generally, free-range chickens are reared extensively, and then with the development of knowledge and awareness, farmers switch to a semi-intensive rearing system, namely maintenance that involves more owner intervention by providing the quality feed. Nowadays, many free-range chicken farming businesses manage their business more paying attention to feed, but the feed provided has a high cost so the results obtained are not balanced, therefore it is necessary to seek alternative feed ingredients that are cheap but still of high quality.

The quality of a product greatly determines the level of success of a business, this also applies to meat products. Meat with good quality will be more favored by consumers. One of the qualities of meat can be seen in its physical properties. Testing the physical properties of meat is carried out by testing the pH of the meat, cooking loss, and water content (Soeparno, 2005). The physical properties of meat affect the quality of meat processing, the determination of the quality of the physical properties of meat needs to be done correctly and carefully to produce accurate data. This requires expertise and skills as well as an advanced understanding of the methods and methods of this test.

LITERATURE REVIEW

2.1. Classification of Native Chicken

Free-range chicken is a long derivative of the historical process of poultry genetic development in the country. Free-range chicken is indicated by the domestication of red jungle fowl (Gallus gallus) and green jungle fowl (Gallus various). Initially, the chickens lived in the forest, then

domesticated and developed by rural communities (Yemen, 2010). Rural communities maintain it as a family food source for eggs and meat. Experiencing natural selection and spreading or migrating with humans and then being cultivated from generation to generation until now (Suharyanto, 2007). Classification is a system of grouping livestock types based on similarities and differences in characteristics. Suprijatna et al (2005) suggested the taxonomy of native chickens in the animal world as follows:
Kingdom: Animalia
Phylum: Chordata
Subphylum: Vertebrates
Class : Aves
Subclass: Neornithes
Ordo: Galliformes
Genus: Gallus
Species: Gallus domesticus

2.2. Banana Peel

Banana peels have high availability and are easy to obtain. This is one of the conditions for the use of an ingredient as feed. Banana peels can be used as poultry feed for growth and production needs (Sunu et al., 2014; Koni, 2012). Free-range chicken is one of the poultry that utilizes feed efficiently, especially fibrous feed. The use of banana peel flour as free-range chicken feed is expected to be the right combination to produce good free-range chicken productivity.

Hernawati et al., (2009) also stated that the provision of feed containing banana peel flour to a level of 30% in native chickens could increase the production of native chickens seen from body weight gain, feed consumption, feed conversion, cholesterol levels in blood serum, meat, liver. , feces and the weight of the digestive organs produce fairly good values.

2.3. Feed

The ration is feed given to livestock per individual or per group of individuals (Wattset al., 2013). An efficient ratio for chickens is a balanced ratio between energy levels and the content of protein, vitamins, minerals, and other nutrients needed for chicken growth.
The ratio of energy and protein must be balanced so that the genetic potential of chickens can be achieved optimally. The ration consumption of each animal is different. Consumption of rations in native chickens can be influenced by several things, including age, type of livestock, livestock activity, energy in the ration, and body weight.

2.4. Meat Quality

Meat quality is determined by consumer acceptance of the properties of meat which include visual and sensory characteristics, including the meat obtained must be safe for consumption and comes from healthy livestock, as well as the welfare status of livestock during a good production system (Becker, 2000).

The physical quality of meat is influenced by factors before and after slaughter. Factors that can affect meat quality before slaughter include genetics, species, breed, type of livestock, sex, age, feed including additives (hormones, antibiotics, and minerals), and stress. Factors after slaughter that affect meat quality include the withering method, electrical stimulation, cooking method, carcass, and meat pH (Soeparno, 2005). The physical properties of meat are one of the properties that can determine the quality of meat. The physical properties of meat that are commonly observed to determine the quality of meat include the pH value of the meat, cooking loss, and water content.

2.5. Meat pH

pH (Power of Hydrogen) is the acidity value of a compound or the hydrogen value of the compound, the opposite of the pH value, namely the basicity value. In a live state, the pH of the meat is between 6.8 – 7.2, and the pH of the ultimate normal meat is 5.4 to 5.8 (Lawrie, 2003). According to Soeparno (2005), changes in pH values are very important to consider in postmortem meat changes. Factors that affect the rate and magnitude of postmortem pH decline can be divided into two groups, namely intrinsic and extrinsic factors. Intrinsic factors include species, muscle type, and muscle glycogen. Winarso (2003) stated in his research, that age and different muscle types in native chickens affect the pH value.

Extrinsic factors that affect the pH value of meat include feed, environmental temperature, additive treatment before slaughter, and stress after slaughter (Soeparno, 2005). The pH value of the meat will change after the cattle are slaughtered. The process that occurs is the reshuffling of glycogen into lactic acid continuously until the glycogen reserves are depleted and the pH of the meat becomes low so that it can stop the activity of glycolytic enzymes.

2.6. Cooking loss

Cooking loss is the percentage of the difference between the weight of the meat before and after cooking. Cooking loss is a function of temperature and cooking time. Soeparno (2005) stated that the cooking loss of meat varies from 15% to 54.5%. Age differences, breed of livestock, feed consumption, and slaughter weight, especially if there are differences in intramuscular fat disposition can cause differences in cooking losses (Soeparno, 2005).

According to Winarso (2003), adult cattle have a lower cooking loss than young cattle. This is due to the fat content in adult cattle which is more than in young cattle so that it can withstand the discharge of meat fluid during boiling. Generally, the higher the cooking temperature and the longer the cooking time, the greater the fluid content of the meat lost until it reaches a constant level. Meat with a lower cooking loss has relatively better quality than meat with a higher cooking loss because the loss of nutrients during cooking will be less (Soeparno, 2005).

2.7. Water content

Water is an important component in foodstuffs because water can affect the appearance, texture, and taste of food. Aberle et al (2001) also mentioned that water content can differ between muscles, differences in water content in the animal's body are influenced by variations in age and feed. According to Nurwantoro and Mulyani (2003), the water content of free-range chicken breast meat is around 75% and is influenced by age, livestock species, nation, and muscle location. Fresh meat feels wet to the touch. This is due to the presence of water in the meat.

METHODS

Testing of meat pH, cooking loss, and water content were carried out at the Agricultural Laboratory, Universitas Pembangunan Panca Budi Medan. Research Materials and Tools. The tools used in the study were a set of chicken coops and equipment for feeding and drinking places, stationery, pH meter (Milwaukee MW 101), blender, pH 7 buffer solution, knives, filter paper, plastic clips, digital scales, oven, boiling pot, measuring cup, gas stove.

The research method used in this study was an experimental method with a completely randomized design (CRD), with 3 treatments and 6 replications of rations containing banana peels. P0 the use of rations without banana peel flour, P1 the use of 5% banana peel flour in the ration, and P3 the use of 10% banana peel flour in the ration. The variables observed in this study were pH test, cooking loss, and water content.

RESULTS AND DISCUSSION

4.1. Research result

The results showed that the use of banana peel flour in the ration gave an insignificant difference (P>0.05) in meat pH, cooking loss, and water content. Based on the research results, the average pH value, cooking loss, and water content can be seen in table 1.

Table 1. Average pH value of meat, cooking loss, and moisture content of free-range chicken meat fed with banana peel flour.

Treatments	Variable		
	pH	Cooking loss (%)	Water content (%)
P0	5.64^{c}	32.50^{tn}	73.83^{tn}
P1 (5%)	5.48^{a}	33.33^{tn}	74.67^{tn}
P2 (10%)	5.52^{ab}	35.83^{tn}	75.00^{tn}

Meat pH

The results of the analysis of variance showed that the application of banana peel flour to native chickens had a significant effect (P>0.05) on the pH of the meat. The highest pH value of meat was found in treatment P0 which was 5.64 and the lowest was found in treatment P1 which was 5.48. Treatment P1 was not significantly different from treatment P2 but significantly different from treatment P0. Treatment P2 was significantly different from treatment P0.

This is under the statement of Soeparno (2009) which states that the pH of meat products will decrease until the final pH is reached, which is between 5.4-5.8. The results of this study indicate that the pectin content in banana peels can affect the rate of glycolysis so that it also affects the pH of the meat. The occurrence of differences in pH values is thought to be due to changes in pH after livestock die, which is determined by the glycogen content in the meat and handling before slaughter.

Linawati (2006) stated that post-mortem length had a significant effect on the pH of the meat, then Soeparno (2009) stated that the postmortem glycolysis rate and enzymatically would produce lactic acid which resulted in a decrease in the pH of the meat. The decrease was due to the presence of pectin content, wherein the pectin can be extracted simply by acidic complex polysaccharide compounds which are present in varying amounts, and widely distributed in tissues. Pectin also functions as an adhesive between one cell wall and another

4.2. Cooking Loss

The results of the analysis of variance in the application of banana peel flour to native chickens had no significant effect (P>0.05) on cooking loss. The average results of cooking loss P0, P1, and P2 respectively were 32.50%, 33.33%, and 35.83%. This dissimilarity in the cooking loss value of free-range chicken was due to the difference in each ration treatment for native chickens, while other factors were influenced by the contraction status of the myofibrils in the meat, resulting in the activity of protease enzymes that can hydrolyze peptide bonds of meat proteins into simple and effective peptides. This is by the opinion of Wahyuni 2005 which states that hydrolysis bonds will cause the structure of the meat to become looser so that there is more water in the meat because it affects the yield of extracted pectin contained in banana peels.

The average results showed that the lowest cooking loss was at the level of 0% banana peel flour (control) which was 32.50% and the highest was at 10% banana peel flour (P2), which was 35.83%. The lower the cooking loss, the better the quality. Soeparno (2009) said that meat with a lower cooking loss has relatively better quality than meat with a higher cooking loss because the loss of nutrients during cooking will be less. The results of the analysis of variance between treatments P0, P1, and P2 showed no significant difference (P>0.05).

This condition indicates that the more addition of banana peel flour to the free-range chicken ration can meet the needs of free-range chicken but has not significantly affected the cooking loss of native chicken meat, this is because if the cooking loss value is high, it can be used to estimate the amount of water bound inside. and between muscle fibers. In this case, it is known that the growth rate is strongly influenced by the application of banana peel flour to native chicken meat, not by the quality of the meat including cooking loss.

4.3. Water Content

The results of the analysis of variance showed that the quality of free-range chicken (Gallus domesticus) fed with banana peel flour (Musa sp) in the ration was not significantly different (P 0.05) on the moisture content. The average results for each level of P0, P1, P2 respectively were 73.83%, 74.67%, and 75.00%. The dissimilarity of the water content in the free-range chicken meat is due to the tendency of the water content in the free-range chicken meat to increase along with the increase in the concentration of banana peels used.

The lowest water content was found in the administration of 0% banana peel flour (control) of 73.83% and the highest was in the administration of 10% banana peel flour, which was 75.00%. The results of this study are in accordance with the statement of Nurwantoro and Mulyani (2003) in their research which states that the water content of free-range chicken meat is around 75%, then also states that the water content of chicken meat is influenced by age, livestock species, nation and muscle location.

CONCLUSION

The results showed that the application of banana peel flour in the ration of free-range chicken had no significant effect (P>0.05) on cooking loss, and water content but significantly (P0.05) on the pH of the meat.

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