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Improving the Quality of Broiler Duck Carcasses with the Addition of Meniran Plan (Phylanthus niruri L.) Ekstrast as a Feed additive

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Abstract

The purpose of this research was to determine the improvement of the carcass quality of broiler ducks with the addition of meniran extract as a feed additive. This is based on the fluctuating price of feed 70 – 80% is part of the operational costs and the prohibition on the use of antibiotics requires alternative feed additives that are safe for human consumption. This research was carried out in Juni – August 2021 in Dayu Village, Nglegok District Blitar Regency. The method used is experimental with 4 treatments and 3 replications. The design used is Completely Randomized Design. The results of this study gave an insignificant effect on slaughter weight (P>0,05), gave a significant effect on carcass weight and carcass percentage (P<0,05). Nevertheless, the result showed that giving meniran extract as a feed additive cpould improve the carcass quality of broiler duck incuding carcass weigh and carcass percentage and dit not have a significant effect on slaughter weight. It is recommended to use meniran plan extract level 3% to improve the carcass quality of broiler ducks.

Keywords: meniran; carcass quality; broiler duck;

Introduction

Many studies related to herbal plants (phytibiotics) have been carried out with the aim of minimizing the use of antibiotics that can leave residues that are dangerous if consumed by human. One of the phytibiotics known to increase the immune system of livestock is the meniran plant (Phyllanthus niruri L.). Many research results prove that this meniran plant is able to increase the endurance of livestock so that livestock production increases, especially in poultry. One indicator of maximum absorption. The results showed that meniran plants was able to increase the absorption of the small intestine of broiler (Lestariningsih et al., 2015a). Meniran plant contains lignans, flavonoids, phyllanthin, hypophyllanthin, glycosinoid and tannins mentioned. These compounds have function as antimicrobials and antioxidants (Kamruzzaman & Hoq, 2016). According to (Rahmayanti et al., 2020) meniran plant also contains phenols, steroids and terpenoids which have potential as antibacterial. Meniran plants develop into herbal medicines that are useful for maintaining immune system (Permata & Sayuti, 2016). In his review article it was stated that the mneiran plant contains as flavonoids, alkaloids, terpenoids, lignans, polyphenols, tannins, coumarins and saponin (Meilani et al., 2020). The content of this bioactive compound is thought to provide potential for meniran as an antibacterial (Hidanah et al., 2017). Flavonoids are one of the largest class of naturally occurring phytochemical compounds that have multiple biological functions providing stress defense in plant and health benefits in feed animal (Tohge et al., 2018).

One type of the poultry that also has the potential to be developed is broiler duck. Broiler ducks have the ability to be more resistant to disease and have a relatively faster growth than native chickens. The population of broiler ducks has increased by 0,1% from 2015 to 2019. However, this is not in accordance with the strategic plan for the development of livestock and animal health for 2015 – 2019. Even though the demand for duck meat continues to increase eve-

ry year. One type of broiler duck that has fast growth has a large weight and is productive in producing meat, manely hybrid duck and peking duck.

Location and Time

This research was carried out from april to august 2021 in Dayu Vilage Nglegok distrik, Blitar Regency. In addition, the proximat analysis was carried out in the nutrition laboratory of the Department of Fisheries and Livestock, Blitar Regency.

Materials and Methods

The method that will be used in this research is an experiment with a completely randomized design consisting of 4 treatmenst and 3 replications. The materials to be used are meniran plant, 96 Day Old Duck (DOD), and basal feed. The strain of duck that will be used is a hybrid. The basal feed that will be used consists of kebi and concentrate. The equipment that will be used for extraction is an Erlenmeyer, measuring cup, spatula and maeration tank. The composition and nutrional content of basal feed is shown in Table 1.

The additional level of extraction of meniran plants for broiler ducks (given from the age 14 days) is as follows :

P0 : 0% extract of meniran supplementation
P1 : 1% extract of meniran supplementation
P2 : 2% extract of meniran supplementation
P3 : 3% extract of meniran supplementation

Table 1. The composition of the diet and its nutritional content component

Composision	Starter	Finisher
Kebi	20 %	75%
Concentrate	80 %	25%
Nutrient content Metabolic energy (kcal/ kg) Crude protein (%) Crude Fiber (%) Crude fat (%)	 2900 22 4 3	 3000 18,25 4,44 3,25

Meniran Ekstract procedure

The extraction method used is the maserasion method using 96% ethanol as a solvent. Meniran ekstract prosedur :

1. Weight the meniran to be extracted
2. Cut the meniran into smaller and uniform sizes
3. Put it in the extraction container
4. Enter 96% ethanol as a solvent with a ratio between meniran and ethanol, which is 1:10
5. Close the extraction place
6. Stir for 15 minutes once up to 2 x 24 hours
7. Filter the meniran extract using a filter
8. Meniran extract is ready to use

Slaughter Weight, Carcass Weight and Carcass Percentage

Slaughter weight was obtained when weighing ducks aged 6 weeks. Varcass weight was weighed after deducting the slaughter weight of feathers, head, legs, blod and visceral organs. Carcass percentage calculated by comparison between carcass weight (gram) and live weight (gram) and multiplied by 100%.

Data Analysis

The data obtained will be tested using analysis of variance and if there are significant results, continue with Duncan;s multiple distance test. The linier model used:

$$Y_{ij} = \mu + \tau_i + \varepsilon_{ij}$$

Information :

Yij : The carcass quality of the j meat duck carcass that received treatment
μ : General mean
τi : Effect of feed additive from treatment
εij : Effect ofexperimental error on carcass quality of broiler ducks
I : Treatment (1,2,3 and 4)
J : Replicate (1,2 and 3)

Results and Discussion

This research of giving meniran extract was applied to broiler duck The selection of hybrid ducks was due to the fact that hybrid ducks in the cultivation business resulted in better feed conversion than reping ducks (Ridwan et al., 2019).

Table 2. Results of statistical analysis of carcass quality with the addition of meniran microgreen extract 72,65 2,57 c

Treatments	Cut weight	Carcass weight	Carcass persentage
P0	1417 ± 62.11	820.46 ± 43.89[a]	58.03 ± 5.08[a]
P1	1376 ± 00.00	852.54 ± 35.26[ab]	61.95 ±2.56[ab]
P2	1407 ± 161.44	902.61 ± 40.72[bc]	64.52 ±5.55[bc]
P3	1316 ± 98.32	955.86 ± 70.51[bc]	72.65±2.57[c]

Note : diferent notations show significantly different effects

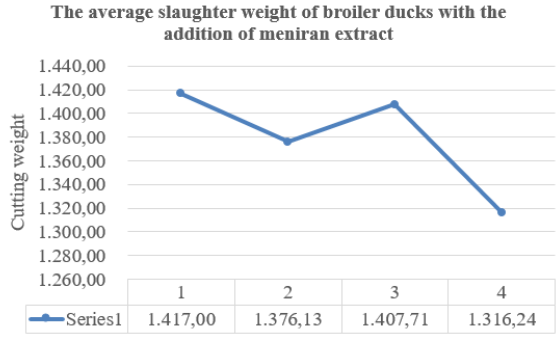

Figure 1. The average slaughter weight of broiler ducks with the addition of meniran extract

Meniran plant extracts did not have a significantly different effect on cut weight (P>0.05), had a significant effect on carcass weight (P<0.05) and had a significant effect on carcass percentage (P<0.05).

The effect of giving meniran plant extract on the slaughter weight of broiler ducks

The results showed that the meniran plant extract did not have a significantly different effect on the slaughter weight of broiler ducks (Figure 1.).

Based on figure 1. It is known that the best cutting weight is with 0% treatment without giving meniran extract. The slaughter weight of broiler ducks includes all parts of broiler ducks, manely feathers, blood, visceral organs and carcass. There are several factors that affect the final body weight of broiler ducks, including initial weight (Rahmah et al., 2016). In this research the initial weight of DOD was uniform beetwen 45 – 46 g.

The results showed thet meniran extract had a significant effect on the carcass weight of broiler ducks although the final body weight was not significantly different. This shows that

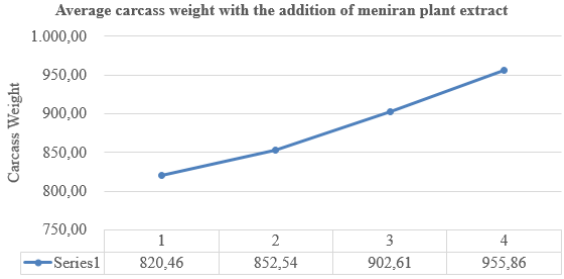

Figure 2. Average carcass weight with the addition of meniran plant extract

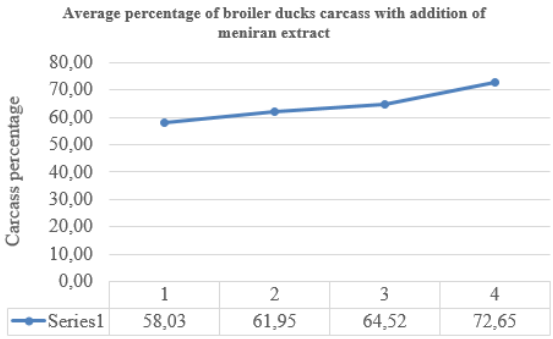

Figure 3. Average percentage of broiler ducks carcass with addition of meniran extract

there is a difference in the yield of carcass and the slaugher weight of broiler ducks. The best result of carcass body weght was P3 with a level of 3% meniran plant extract and produced a carcass weight of 955,88 g. This is because meniran plans contain flavonoid compounds that can stimulate immunity. Meniran plants contain flavonoids as much as 0,99 – 1,88% (Lestariningsih et al., 2015b). In addition, meniran plants can also reduce tissue damage (Krisyanella et al., 2013). Flavonoids modulate gut immune function. These include modulation of T cell differentiation changes in the gut microbiota and modulation of cytokines (Pei et al., 2020).

Several other research have shown that the higher the concentration of meniran plant extract, the higher the inhibition zone it produces against *Salmonella* bacteria (Shagita et al., 2020) and *Escherichia colli* bacteria (Dwi Aprilia Anggraeni, 2017). Concentration of 45% can inhibit 10,98 mm of *Salmonella* bacteria. This shows the effectiveness of meniran extract as an antimicrobial. The function of the cytoplasmic membrane can be inhibited, causing damage to the bacterial cell membrane. Therefore, it affects the metabolic processes of bacteria which are eventually disrupted (Shagita et al., 2020). Inhibition of these pathogenic bacteria can improve the balance of the small intestine microflora. This is because the results of the metabolism of non pathogenic bac-

teria, namely the concentration of hydrogen ions, redox potential, hydrogen sulfide have the potential to inhibit the growth of pathogenic microflora.

The addition level of 1,2% meniran flour can minimize *Escherichia colli* and optimize Lactic Acid Bacteria (Lestariningsih et al., 2015a). The balance of the microflora can help the growth of villi in the process of absorption of nutrients in the small intestine. Optimal absorption of nutrients will have an impact on the growth of meat in livestock which can be seen from the weight of the carcass.

Figure 3 shows that the meniran plat extract can have a significantly different efferct on the percentage of carcasses. This is due to the high carcass weight of broiler ducks. The highest percentage of treatment result manely P3 with an addition level of 3% of the meniran plant extract, produced a carcass percentage of 72,65%. The precentage of carcasses was calculated based on the ratio of carcass weight to live weight and multiplied by 100% (Daud, 2016). One of the factors that caused a higher percentage of P3 carcass was due to the relatively lower slaughter weight but high carcass weight. The high carcass percentage at P3 level was probably due to the strong flavonoid activity. Flavonoid have strong antioxidant activity in vitro, by scavenging free radicals and chelating metals (Pei et al., 2020). In addition, flavonoids, especially isoflavonoids inhibit the growth of many microorganisms (Iwashina, 2003).

Conclusion

Giving meniran plant extract with a level of 3% can improve the quality of broiler carcass which includes carcass weight and carcass percentage althought it is not optimal in increasing the slaughter weight of broiler ducks.

Suggestion

It is recommended to use meniran plant extract with a level of 3% to improve the carcass quality of broiler ducks.

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