The effect of probiotic originated from Kumpai Grass Silage to Final Weight, Carcass Percentage and Commercial Carcass Cut of Pegagan duck

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Abstract. Optimal performance production of duck may increase by the probiotic treatment. The research was held to study the effect of probiotic originated from Kumpai grass silage to Final weight, carcass percentage and commercial carcass cut of Pegagan duck. Probiotic solution contained lactic acid bacteria (LAB) were voluntarily taken by Pegagan ducks every morning with various LAB concentration Completely randomized design experiments with 5 treatments; P0 (control), P1 (106 cfu LAB), P2 (107 cfu LAB), P3 (108 cfu LAB) and P4 (109 cfu LAB), each treatment was replicated 4 times respectively. The result showed that all treatments were significantly affect the final weight, carcass percentage and commercial cut especially breast cut. Probiotic solution treatments may enhance the performance of Pegagan Duck.

1. Introduction

Gut microflora has been known to affect the health of poultry. The balance of pathogenic and non-pathogenic gut microflora was related to the absorption of nutrient in the gastro intestinal tract. Lactic acid bacteria as non-pathogenic bacteria could suppress the growth of pathogenic bacteria by the excretions of organic acid. Application of probiotics to poultry were preferable since probiotics has no residual effect on meat. Furthermore, application of probiotic to poultry has beneficial effect on prolonged intake [1]

LAB as common probiotic content plays significant role on poultry production [2] . LAB can be obtained from various sources, for example silage. Silage as fodder for cattle were contained LAB which can be transferred to media and re-use as probiotic. [3] reported that LAB from Kumpai grass silage were higher than other sources. Kumpai grass were local forage which available abundantly. Therefore, Kumpai grass were processed as silage for ruminants. Information on the effect of probiotic originated from Kumpai grass silage to poultry production were very few, furthermore its effect on meat characteristic as well. This research was attempt to study the effect of probiotic originated from Kumpai grass silage to Final weight, carcass percentage and commercial carcass cut of Pegagan duck.

2. Material and method

Sixty daily old duck were grouped into 5 treatments of probiotic solutions; P0 (control), P1 (106 cfu LAB), P2 (107 cfu LAB), P3 (108 cfu LAB) and P4 (109 cfu LAB), and each treatment was replicated

4 times for 8 weeks duration. Probiotic solution were prepared as described by [3]. Newly prepared probiotic solution (100 mL) were offer as drinking water every morning and in the end of experiment the birds were weighed and slaughtered. Carcass were grouped into commercial cuts and weighed. Observed parameters were final weigh and carcass commercial cuts [4], carcass percentage [5]. Table 1 and 2 showed ration composition and nutrition of feed experiment.

Table 1. Feed ingredient of experiment ration

Ingredients	(%)
Corn	68
Soybean meal	16
Rice bran	10
Meat Bone Meal	5
Mineral mix	0.5
Grit	0.5
Total	100

Tabel 2. Nutrient composition of ration experiment

Nutrient	Value
Metabolic Energy (kkal/kg)	3109
Crude Protein (%)	18.16
Crude Fiber (%)	7.96
Extract ether (%)	4.45

3. Result and Discussion

The results of the study of the effect of probiotic administration of Kumpai grass silage on carcass quality in Table 3.

Table 3. Final Weight, Carcass Percentage and Commercial Carcass cut of Pegagan Duck

Treatment	Final Weight (g)	Carcass percentage (%)	Breast (%)	Thigh (%)	Wing (%)	Back (%)
P0	1165.48 ± 0.06 [a]	48.96 ± 2.33 [a]	28.38 ± 0.54 [a]	26.80 ± 0,63	16.95 ± 1.17	27.89 ± 1.10
P1	1257.10 ± 0.06 [ab]	53.32 ± 2.20 [b]	30,88 ± 0.67 [b]	26.56 ± 1.05	16.34 ± 1.30	26.22 ± 0.92
P2	1277.08 ± 0.09 [ab]	53.47 ± 2.69 [b]	31.20 ± 1.00 [b]	25.72 ± 1.12	16.35 ± 0.64	26.72 ± 1.27
P3	1303.38 ± 0.07 [b]	54.86 ± 1.76 [b]	31.28 ± 1.03 [b]	25.68 ± 1.88	16.43 ± 0.81	26.61 ± 0.76
P4	1370.68 ± 0.10 [b]	54.59 ± 2.69 [b]	31.22 ± 1.18 [b]	25.60 ± 1.63	16.51 ± 1.38	26.68 ± 2.24

Difference superscript express significant results.

Pegagan duck weight produced in this study was around 1,165.48 g - 1,370.68 g. This result is not much different from the study of [6] which states that duck weight maintained until the age of 8 weeks with the provision of probiotics in the form of starbio and EM-4 which is between 1,122.23 g - 1,300.46 g. The increase in Pegagan duck weight in this study was caused by the lactobacilus type of lactic acid bacteria (BAL) which can produce organic acids in the digestive tract, thereby reducing the number of pathogenic bacteria and improving the function of the digestive tract. This causes the absorption of nutrients in the digestive tract to become more optimal so that the nutrients absorbed more.

Increased absorption of nutrients can accelerate tissue growth and increase body weight. This is consistent with the statement of [7] that the administration of probiotic LAB of the lactobacillus type can increase nutrient absorption and body weight. High body weight gain will also produce high cutting weights. The cut weight is influenced by the absorption of amino acids for the formation of the tendon synthesis.

Percentage of carcasses of Pegagan ducks given probiotic treatment as a whole is higher compared to treatment without probiotics / controls (P0). This is because the cut weight produced by giving probiotics is higher than those not given probiotics. Carcass and cut weight have a positive correlation, meaning that the higher the cut weight the higher the carcass weight produced. This is in line with the statement of [8] that the achievement of carcass weight is closely related to the weight of the cut. The high percentage of carcasses besides being influenced by the role of LAB in the digestive tract, is also determined by the amount of wasted body parts such as the head, neck, legs, viscera, hair, and blood. [9] state that the percentage of carcass is affected by the digestive tract and the edible portion such as the head, feet and neck. Large edible portion weights will reduce the duck carcass weight so that it will reduce the percentage of duck carcasses.

The increasing percentage of duck carcasses is caused by the presence of lactic acid bacteria contained in probiotics so as to increase protein consumption. Increased protein consumption will accelerate the synthesis of tendons in the body. This is as reported by [10] that the increase in protein consumption will increase carcass weight and carcass percentage. This is also in line with the statement of [11] that the addition of probiotics in rations can increase protein retention so as to increase the percentage of carcass meat. The percentage increase in carcass is directly related to the availability of tissue-forming amino acids used for the growth process

The commercial carcass slices of Pegagan ducks on the chest which were produced in this study ranged from 28.38% - 31.28%. This value is higher than [12] study that commercial carcass slices of peking ducks were maintained until the age of 8 weeks with the provision of probiotic fermentation rations through drinking water, namely between 22.78% - 24.92%. The percentage of carcass slices in the chest is relatively higher than in other parts. This is because the chest is a part or place of the main meat muscle deposit. This is as stated by [13] that the thoracic part develops more dominantly during growth when compared to the wings and back. According to [14] growth is relatively constant until 12 weeks. A high percentage of carcass will affect the percentage of breast cut produced. This is in line with [15] that the high percentage of carcass allows high chest weight to be produced.

The commercial carcass slices of thigh parts produced in this study ranged from 25.60% - 26.80%. The percentage of thigh carcass slices is greater than the results of [12] that commercial carcass slices of peking duck thighs are maintained until the age of 8 weeks with the provision of probiotic fermentation ration feed which is between 19.99% - 21.06%. High and low percentages of carcass including thighs will be determined by bone size. This is in line with the statement of [16] that the size of the meat deposit in carcass parts is strongly influenced by the percentage of bone.

The commercial carcass slices of the wings produced in this study ranged from 16.34% - 16.95%. the percentage of wing carcass slices is smaller than the results of [12] that commercial carcass slices of wing wings of peking ducks are maintained up to the age of 8 weeks with feeding of probiotic fermentation rations which are between 18.51% - 18.95%.

Another factor that causes results that have no significant effect on the percentage of wing carcass slices is thought to be because the wing is not a part or place of the main meat muscle deposit. This is supported by the statement of [13] that the thoracic part develops more dominantly during growth than in the wing, while in the wing it is more dominated by bone. The percentage of commercial carcass slices produced in this study ranged from 26.22% - 27.89%. This value is lower than the results of the [12] study that the commercial carcass slices of the back of Peking ducks maintained until the age of 8 weeks with the provision of probiotic fermentation ration feed are between 35.44% - 36.47%. The back is a part that is dominated by bone with a relatively slow growth rate. The percentage of the back part in this study was smaller compared to the percentage of the chest. This is thought to be the percentage of bones in the back larger than the chest. Related to this, [16] stated that the small deposit of meat in the carcass parts is strongly influenced by the percentage of bone.

4. Conclusion

The conclusion of the study is that the provision of probiotics from silage of kumpai grass with a concentration of 108 cfu LAB was able to produce cutting weight, percentage of carcass and slices of commercial carcass optimally.

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