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Feeding Local Fermented Feed on Performance and Carcass Percentage of Pekin Duck

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ABSTRACT

This study aimed to examine the effect of local fermented feed using different level of probiotics on performance, carcass production and percentage of Pekin duck. The experiment used 96 one day old Pekin ducks divided into 4 ration treatments. Each treatment consisted of 4 replications and each replication consisted of six Pekin ducks. The treatments were R0: Local feed without fermentation; R1: Local fermented feed with 10 ml probiotic/L; R2: Local fermented feed with 12.5 ml probiotic/L; and R3: Local fermented feed with 15 ml probiotic/L. The observed variables included: live weight, carcass weight, carcass percentage. This research used Completely Randomized Design (CRD). The data obtained were analyzed by Analysis of Variance and continued by Duncan Test.The results showed that different level of probiotic in local fermented feed had no significant effect on live weight, carcass weight and percentage of eight weeks old Pekin duck carcass. The treatments did not show any significant effect on the average body weight and percentage of carcass cuts (chest, wings, thighs, and back). It was concluded that local fermented diet gave positive effect on Pekin duck carcass weight. Local fermented feed using 12.5 and 15 ml probiotics/L of water increased carcass weight of eight weeks old Pekin duck higher than the non-fermented feed.

Key Words: Fermentation, Local Feed, Pekin Duck, Carcass

INTRODUCTION

Generally keeping duck in Indonesia is still in relatively small numbers under extensive management. The negative impact due to this management farming system is that ducks growth slow and produce low meat quality. To increase duck production needs to have superior and productive duck breeds while encouraging the development of broiler duck business in the country. In order to improve the duck meat production quantitavely and qualitatively the good quality of feed has to be available. Although duck has a higher tolerance to feed containing fiber than chicken.

Ducks have also better adaptability to the environment and for some extent has better resistance to diseases, so in maintaining ducks keeping, ones has not to be bothered by giving drugs boost immune or vaccine from certain diseases such as gumboro and new castle desease (-ND). This advantage of ducks will certainly make it easier to breed it. In addition to the high tolerance of coarse fiber, provides opportunities for the use of high-fiber raw material and nutrient value is quite good, and easy to obtain.

Local feed raw materials are one of feed sources that can be used as duck feed. However, the quality of local feed is generally low, limited stock and low nutritious content. Accordingly, it is fundamentally requirement to produce better feed for duck by utilising local feed sources mixed with other materials in order to enhance both meat and eggs production. Therefore, it is necessary to implement a strategy to effectively and efficiently utilize local feed ingredients as mixed materials in duck ration (Daud *et al.* 2014). Efforts to improve the use of local feed have been put by the government through

its policies. However, this effort has not been fully successful, due to the supporting factors that have not been considered such as the provision of facilities, infrastructure, and technology. In relation to efforts to improve the quality of local feed, it is deemed necessary to seek technological breakthrough that is cheap, simple, and has multiple functions. Fermentation feed can improve livestock performance (Missotten *et al.* 2013), meat quality (Ahmed *et al.* 2014; Sutama *et al.* 2015), and ammonia feces (Ahmed *et al.* 2014).

Preparation of fermented feed in addition to preserve of the raw post harvest materials with high water content can be directly used, so that applicable technology can cut the feed production process becomes quicker. Related to the description, the research on the use of local fermented food is important to be specifically inisiated in order to apply appropriate feed technology and at duck farming level. The purpose of this study was to determine the effect of local feed ingredients fermentation on the production and carcass percentage of Pekin duck.

MATERIAL AND METHODS

The research used 96 Pekin ducks at finisher phase. Ration used in this experiment consisted of fermented rations using local feed raw materials (sago waste, corn, rice bran, coconut meal, sago, fish meal, molasses, premix, coconut oil, premix, NaCl, and probiotic).

Treatment rations

Treatment rations used were fermented rations using local feed formulated according to the finisher phase duck requirements. It contained 15-16% crude protein and 2800 kcal/kg metabolizable energy (Table 1).

Method of feed fermentation

The procedure of making fermented feed from each treatment was as follows: all raw feed ingredients were milled using hammer mill. Then, they were mixed following the composition as mentioned in Table 1 until homogeneous. The rations were then mixed with bacteria probiotics that had been dissolved in water and mixed evenly (according to the treatment). The mixture was stored in a closed container for seven days fermentation process. Fermented feed was then ready to be fed to the duck.

Statistical analysis

The study was carried out for four weeks (age 5-8 weeks). The design used was completely randomized design with 4 treatment rations and 4 replications: R0: Local feed without fermentation; R1: Local fermented feed with 10 ml probiotic/L; R2: Local fermented feed with 12.5 ml probiotic/L; and R3: Local fermented feed with 15 ml probiotic/L. The observed variables were: final body weight, carcass weight, carcass percentage and percentage of carcass cuts (back, chest, thigh and wings) of Pekin duck. Data was analyzed by Anova and Duncan test (Steel & Torrie 1995).

Table 1. Composition and nutrients content of the dietary treatment ration

Feed ingredients	Treatment rations (%)			
	R0	R1	R2	R3
Sago waste	11	11	11	11
Rice bran	20	20	20	20
Sago	20	20	20	20
Coconut meal	22	22	22	22
Corn	10	10	10	10
Fish meal	12	12	12	12
Molasses	3.3	3.3	3.3	3.3
Coconut oil	1.0	1.0	1.0	1.0
Premix	0.2	0.2	0.2	0.2
NaCl	0.5	0.5	0.5	0.5
Total	100	100	100	100
Probiotic (ml/L)	0	10	12.5	15
Calculated nutrients content				
Metabolizable energy (kcal/kg)	2,802	2,802	2,802	2,802
Crude protein (%)	15.50	15.50	15.50	15.50
Crude fiber (%)	7.53	7.53	7.53	7.53
Crude fat (%)	7.49	7.49	7.49	7.49
Ca (%)	1.28	1.28	1.28	1.28
P (%)	0.88	0.88	0.88	0.88

RESULTS AND DISCUSSION

Carcass production and carcass portion of 8 weeks old Pekin duck from four dietary treatments are shown in Table 2.

Table 2. Production performances of 8 weeks of age of Pekin duck

Variables	Treatment			
	R0	R1	R2	R3
Final body weight (g)	1,781±193.98	1,768±177.60	1,824±196.05	1,854±212.29
Carcass weight (g)	1,105±124.20	1,091±209.00	1,177±147.10	1,181±180.20
Chest weight (g)	289±75.60	293±51.20	296±65.70	290±73.40
Thigh weight (g)	184±49.90	207±52.20	207±34.90	222±53.90
Back weight (g)	350±122.70	381±172.70	433±138.00	488±202.90
Wings weight (g)	154±22.33	149± 31.76	150±23.92	155±35.49

R0: Local feed without fermentation; R1: Local fermented feed with 10 ml probiotic/L; R2: Local fermented feed with 12.5 ml probiotic/L; and R3: Local fermented feed with 15 ml probiotic/L

The results showed that local fermented ration fed to Pekin duck did not show any significant effect on final body weight, carcass weight and carcass portion of Pekin duck. This was probably caused by the nutrient content in each treatment ration which was relatively the same and provide sufficient nutrients for growing Pekin duck. As the age of the duck increased, body weight, carcass weight and carcass percentage also increased. Donald *et al.* (2002) stated that carcass weight was associated with sex, age, and body weight. Carcass weight could also be influenced by the type, size and genetic factors (Jaturasitha *et al.* 2004; Omojola 2007). Purba & Prasetyo (2014) reported that there was a decrease in the average carcass weight of meat type ducks with increasing crude fiber content in the feed. Muhammad *et al.* (2014) reported that provision of a complete ration based on local fermented raw materials up to 100% level had no effect on growth of South Sumatera local duck.

Percentage of Pekin duck carcass of eight weeks old from four dietary treatments of fermented ration is presented in Table 3.

Table 3. Percentage of carcass and carcass cuts of 8 weeks old Pekin duck

Variables	Treatment			
	R0	R1	R2	R3
Percentage of carcass	62.90±11.03	62.44±14.00	65.43±12.22	63.20±11.53
Percentage of chest	26.00±7.28	27.37±6.80	25.00±7.11	24.87±6.51
Percentage of thighs	17.02±5.84	19.76±6.81	17.85±3.63	19.21±3.75
Percentage of back	31.81±10.76	37.98±25.09	36.45±10.66	39.57±19.84
Percentage of wings	16.12±6.65	16.59± 6.05	15.47±4.92	16.20±3.47

R0: Basal ration (control); R1: Basal probiotic fermented ration of 10 ml/l of water; R2: Basal probiotic fermented ration of 12.5 ml/l of water; R3: Basal probiotic fermented ration of 15 ml/l of water

The results showed that the fermented local feed did not significantly affect the percentage of carcass and the percentage of carcass cuts (chest, thigh, back, and wings) of eight weeks old Pekin duck. Amiruddin *et al.* (2011) reported that carcass cuts would be determined by the size of the body parts such as head, neck, legs, feathers, and blood.

Percentage of Pekin duck carcass produced in this study ranged between 62.44-65.43% and higher than the research results of Daud *et al.* (2016). Carcass percentage of Pekin duck fed in the form of complete ration wafer containing coffee waste were in the range between 53.72-61.10% (Daud *et al.* 2016). Carcass percentage of Pekin duck at eight weeks old given a ration containing golden snail flour and probiotic supplementation ranged between 50.89-51.72% (Daud *et al.* 2017).

The use of fermented local diet had not any significant effect on the percentage of carcass cuts (chest, thigh, back, and wings) of eight weeks old Pekin duck (Table 3). This was probably due to the duck cuts were a component of carcass itself which had a relatively constant growth on the increase of carcass weight (Prasetyo 2011). According to Fan *et al.* (2008), feed was one of the factors that influence the percentage of carcass in poultry consisting of the chest, back, thighs, and wings. Fermentation technology did not interfere both blood profile and digestive organs. The content of fecal ammonia did not significant differ among treatments. The fermented feed is safely administered to laying

ducks because having a probiotic effect as well as safety for environment (Alaily *et al.* 2017).

CONCLUSION

The use of fermented local feed produced positive effect on production and carcass percentage of 8 weeks old Pekin duck. Addition of probiotic of 12.5 and 15 ml/L of water generated a good performance of Pekin duck, including increased carcass weight and carcass percentage of 8 weeks old Pekin duck.

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DISCUSSION

Question

Why were the results not significantly different?

Answer

Perhaps, it was because the ration was formulated in balanced nutrient.