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Effect of Supplementation of *Indigofera zollingeriana* Top Leaf Meal in the Diets to the Slaughter Weight and Carcass of Pegagan Ducks

Effect of Supplementation of *Indigofera zollingeriana* Top Leaf Meal in the Diets to the Slaughter Weight and Carcass of Pegagan Ducks

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Abstract. This study was aimed at determining effect of supplementation of Indigofera zollingeriana top leaf meal in the diets to the slaughter weight, carcass percentage, and commercial carcass slice percentage of Pegagan ducks. The method used was Completely Randomized Design consisting of 5 treatments and 4 replications. The treatments consisted of R0, R1, R2, R3, and R4, that are rations with supplementation of *Indigofera zollingeriana* top leaf meal of 0% (control), 1%, 2%, 3%, and 4%, respectively. Parameters observed were: slaughter weight, carcass percentage, and commercial carcass slice percentage. The findings indicated that the supplementation of *Indigofera zollingeriana* top leaf meal in the diets had not significantly (P>0.05) to slaughter weight, carcass percentage, and commercial carcass slices of Pegagan ducks. The conclusion showed that the supplementation of *Indigofera zollingeriana* top leaf meal up to 4% can be used in the diets, cause does not negative affect to slaughter weight, carcass percentage, and commercial carcass slices percentage of Pegagan ducks.

1. Introduction

Efforts to product good duck meat can be done by carrying out good maintenance management. One of the maintenance management is by giving quality feed to the ducks. Quality feed must meet all nutritional needs for ducks. One form of feeding management is by adding supplements in the feed which aims to improve ration quality. Rations quality improvement can improve duck's health and digestion so that it can increase duck production.

One supplement that can be added in duck rations is *Indigofera zollingeriana* top leaf meal. *Indigofera zollingeriana* top leaf meal contains good nutrients and low anti-nutrients and also contains active ingredients in the form of beta-carotene. Ref. [1] stated that *Indigofera zollingeriana* top leaf contains protein, digestible protein, crude fiber, calcium, phosphorus, and tannin of 28.98%, 98.88%, 8.49%, 0.53%, 0.34%, and 0.29%, respectively. Tolerable amount of tannins in poultry feed was 2.6 g, while it of saponins was 3.79 g [2], so that *Indigofera zollingeriana* top leaf were not toxic and could be used as supplements in duck rations.

Ducks given good rations will produce good slaughter weight and good carcass. Carcass is the body parts of poultry including the skin after being slaughtered, excluding the feather, abdominal fat, internal organs, legs, head, neck and blood, except the lungs and kidneys. Carcass production can be seen from body weight. The higher the body weight, the more the carcass production. The percentage of carcass is an important factor to assess livestock production, because production is closely related to carcass weight, where the carcass weight increases, the carcass production increases. Supplementation of additive feed will affect the productivity and carcass quality.

2. Materials and Methods

2.1. Materials

The materials used as research materials were Pegagan ducks in the laying phase, aged 14 months. The rations were prepared containing crude protein of 18% and metabolizable energy of 2700 kcal/kg [3]. Feed ingredients used to prepare rations consisted of milled corn, rice bran, meat bond meal (MBM), soybean meal, bone meal, grit, dry noodle waste, premyx, DCP, and *Indigofera zollingeriana* top leaf meal.

2.2. Method

This study was conducted using a Completely Randomized Design (CRD) consisting of 5 (five) treatments of rations containing proportions of *Indigofera zollingeriana top* leaf meal namely R0 (0%), R1 (1%), R2 (2%), R3 (3%), and R4 (4%). Each treatment was repeated four times and each replication consisted of 3 Pegagan ducks aged 14 months with an average weight of 1.54 kg placed in a litter cage that was 40 cm long, 40 cm wide, and 40 cm high.

Testing the supplementation of In*digofera zollingeriana* top leaf meal to Pegagan duck rations was observed for 8 weeks. Feeding was done 2 times every day, namely in the morning and evening. Drinking water administration was carried out ad libitum. Measurement of ration consumption was carried out every week. To get a duck carcass, the duck was previously cut or slaughtered at the neck behind the lower jaw. After slaughtering and bleeding, the duck is weighed and its feather was plucked. Feather removal was done by soaking the duck within 60oC warm water for 60 seconds, or until the large feathers of the wing are easily removed. The next process was removing the internal organs of the duck (evisceration). After the head, neck, and legs were cut to get carcass.

2.3. Parameters Observed

2.3.1. Slaughter Weight

Slaughter weight is the weight of the animal that has been cut and its blood has been removed. Before being slaughtered, the animal has been fasted for 12 hours. Slaughter weight is obtained from weighing the animal that has been cut and after removing the blood.

2.3.2. Carcass Percentage

Carcass percentage is the percentage of the ratio between carcass weight and live weight of ducks.

2.3.3. Commercial Carcass Slice Percentage

Percentage of commercial carcass slices is obtained by calculating the percentage of the ratio of the weight of each section of commercial carcass slices (breasts, and thighs) to the live weight of ducks.

2.4. Data Analysis

Data obtained during the study were analyzed statistically by Analysis of Variance according to the design (CRD). If there were significant differences in treatment, further testing would be carried out with the Duncan Multiple Range Test (DMRT) according to Ref. [4].

3. Results and Discussions

The average effect of supplementation of *Indigofera zolingeriana* top leaf meal on Pegagan duck weight can be seen in Table 1. The results of the analysis of variance on the slaughter weight of Pegagan ducks showed that supplementation of *Indigofera zollingeriana* top leaf meal up to 4% in rations had no significant effect (P>0.05) on the slaughter weight of Pegagan ducks (Table 1). This shows that the beta-carotene contained in Indigofera zollingeriana top leaf meal has not been able to improve the digestive performance of Pegagan ducks during the study, so that the slaughter weight of ducks given *Indigofera zollingeriana* top leaf meal up to 4% level in the ration has the same results with it without supplementation of *Indigofera zollingeriana* top leaf meal. *Indigofera zollingeriana* top leaf meal contains Beta-carotene of 507.6 mg/kg [1], so that beta-carotene in rations with supplementation of 4%

Indigofera zollingeriana top leaf meal which was amounted to 20.28 mg/kg was thought to only act as the antidote to free radicals during eggs production, because ducks used were in egg production phase. Antioxidants influenced duck egg productivity since they functioned to counteract free radicals that could interfere with duck egg production. Meanwhile, vitamins are one of the substances that could counteract free radicals, as reported by [5]. They can also act as antioxidants. The function of beta-carotene is as a vitamin A precursor which is enzymatically transformed into retinol, the active substance of vitamin A in the body [6].

Table 1. The Average Slaughter Weight of Pegagan Ducks during the Research

Treatment	Slaughter Weight (g)	Carcass Percentage (%)	Slice of Chest (%)	Slice of Thigh (%)
R0	1560.0 ± 135.65	60.93 ± 3.99	29.55 ± 2.15	20.07 ± 1.82
R1	1615.0 ± 179.35	63.10 ± 5.14	27.98 ± 4.27	21.50 ± 4.58
R2	1512.5 ± 199.73	62.10 ± 2.96	30.37 ± 1.17	18.43 ± 2.45
R3	1425.0 ± 166.23	61.66 ± 2.83	30.25 ± 1.85	19.27 ± 0.77
R4	1600.0 ± 157.74	61.65 ± 9.52	29.57 ± 3.02	19.48 ± 1.79

The results of the analysis of variance on the percentage of Pegagan duck carcasses showed that supplementation of *Indigofera zollingeriana* top leaf meal in the rations had no significant effect (P>0.05) on the percentage of Pegagan duck carcasses. This is because the supplementation of *Indigofera zollingeriana* top leaf meal did not significantly affect the slaughter weight. Ref. [7] reported that the percentage of carcass was influenced by slaughter weight. Ref [9] explained that the slaughter weight will affect the percentage of carcass, in which the higher the slaughter weight, the higher the carcass.

The average percentage of Pegagan duck carcass in this study ranged from 60.93% to 63.10%. The percentage of carcass in this study was greater than that of [Ref. 8] which gave *Indigofera zollingeriana* meal up to the level of 5.5% and lemuru fish oil ranging from 51.62% to 52.94%. Ref. [9] stated that the average value of the percentage of local duck carcasses ranged from 52.06% to 54.06%.

The results of the analysis of variance on commercial carcass slices of Pegagan duck breast showed that supplementation *Indigofera zollingeriana* top leaf meal had no significant effect (P>0.05) on the percentage of commercial carcass slices for breast part. This is thought to be due to the same slaughter weight and carcass percentage produced in this study. Slaughter weight is the main factor that causes differences in growth of the breasts [10]. According to [11], the carcass slices of duck breast part are influenced by the percentage of carcass, while the percentage of carcass is influenced by the type of duck, the amount and quality of the ration, duck slaughter weight [12]. Breast commercial slices are parts that contain a lot of muscle tissue so that their growth is more influenced by proteins, especially amino acids. Duck breast meat is very well used as a source of polyunsaturated essential fatty acids [13]. The average weight of the commercial breast carcass slices was ranging from 29.55% to 30.37%. In addition to slaughter weight and carcass percentage, good commercial breast carcass slices could be obtained from supportive duck environments. Ref. [14] stated that under normal conditions with good environmental conditions, the percentage of breasts ranges from 35%. Breast meat weight affects overall breast weight, so that when breast meat weight increases, the percentage of breast meat also increases [15].

The commercial carcass slices of Pegagan duck thighs showed that the addition of supplementation *Indigofera zollingeriana* top leaf meal in Pegagan duck rations had no significant effect (P> 0.05). This was also caused by that the slaughter weight and the percentage of carcass produced had an insignificant effect. In addition to being influenced by slaughter weight, other things that are thought to affect the percentage of carcass slices of the thighs part insignificantly are the protein and fat in the rations that were used as energy sources for the movement and body support of the poultry [8]. The average percentage of commercial carcass slices of the thighs in this study ranged from 18.43% to 21.50%. In the study of [8], 34-week-old local ducks that were fed with *Indigofera zollingeriana* leaf meal and lemuru fish oil also had an unreal effect which was 24.08% to 26.17%. The thigh part is

affected by the slaughter weight which indirectly affects the weight of the carcass and the carcass parts [16].

4. Conclusions

The results showed that supplementation of *Indigofera zollingeriana* top leaf meal up to 4% can be used in Pegagan duck diets, cause had not negative affect to the slaughter weight, carcass percentages and commercial carcass slice percentage.

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