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EFFECT OF PARTIAL REPLACEMENT OF ENERGY AND PROTEIN IN THE RATIONS FOR DUCKLINGS WITH POULTRY DROPPINGS

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An experiment was conducted using 112 Khaki Campbell ducklings of about 11 weeks age to see the effect of replacing calorie and protein in their diets with poultry droppings. There was no significant difference in body weight gain, feed consumpion and feed efficiency due to the replacement of calorie and protein in the ration of ducklings with 5,10 and 15 per cent poultry droppings. However, the feed cost per bird gradually decreased with the inclusion of higher levels of poultry droppings.

INTRODUCTION

Feed is the main constraint in the development of duck industry, though there are vast opportunities for this industry in a rivarian country like Bangladesh. Efforts are therefore needed to explore the possibilities of using unconventional sources of feed in the ration to reduce feed cost. Poultry droppings may be one of the such uncoventional feed items which is easily available and can be used in duck ration.

Poultry built-up litter is a source of valuable nutrients like riboflavin and vitamin B_{12}. Poultry droppings contain about 25% crude protein, half of which is true protein (Biely *et al.*, 1980). The metabolizable energy value of poultry droppings was found to be 850 Kcal/kg (Blair, 1974). Kotlyar *et al.* (1983) and Koniok and Rozyeka (1984) carried out researches with poultry droppings on different kinds of chicken for both meat and eggs. But feeding of poultry droppings in ducklings is completely a new approach in Bangladesh. The present work was planned to study the effect of various levels of poultry droppings on body weight gain, feed consumption, feed efficiency, mortality of ducklings and also to find out its economic feasibility in duck ration.

MATERIALS AND METHODS

The experiment was conducted for a period of nine weeks at Bangladesh

Agricultural University Poultry Farm. Poultry droppings which were used in the rations of ducklings at different levels in combination with other feed ingredients were collected from the laying pens of the farm. After sundrying poultry droppings were sterilized by autoclave. The rations were made isocaloric and isonitrogenous. The composition of the experimental rations is shown in Table 1.

Table 1. *Composition of the experimental rations*

Ingredients	Dietary treatments			
	T_1	T_2	T_3	T_4
Wheat	48	48	42	40
Wheat bran	2	2	1	1
Rice polishing	17	16	20	19
Til oil cake	13	11	10	9
Fish meal	14	12	11	10
Poultry droppings	---	5	10	15
Molasses	3	3	3	3
Oyester shell	0.5	0.5	0.5	0.5
Bone meal	1.0	1.0	1.0	1.0
Shark liver oil	1.0	1.0	1.0	1.0
Common salt	0.5	0.5	0.5	0.5
Total	100.00	100.00	100.00	100.00
Calculated composition :				
ME (Kcal/kg)	3501.46	3376.60	3258.12	3120.44
Crude protein (%)	18.89	18.75	18.34	18.05
Calorie : protein ration (ME : CP)	188:1	180:1	177:1	172:1
Crude fiber (%)	5.53	5.68	6.03	6.31

One hundred and twelve Khaki Campbell ducklings of two weeks age and of approximately uniform size were selected for the experiment. The experimental birds were divided into four treatments designated as T_1, T_2, T_3, and T_4 of which T_1 was the control group and the remaining three were test groups with two replications R_1 and R_2, each of which had of 14 birds, following comletely randomized design (CRD). The birds were reared on floor in which sand was used as litter. Feed and water were given ad-libitum to the birds. The

Table 2. *Average performance of the birds given differen treatments during experimental period of nine weeks*

Treatments	Initial body wt. (g)	Final body wt. (g)	Daily body wt. gain (g)	Total feed consumption (g)	Daily feed consumption (g)	Feed efficiency (Feed/gain)
T_1 (Basal)	77.46	1045.23	16.59	6383.41	101.32	6.107 : 1
T_2 (5% poultry droppings)	72.19	905.41	14.37	5373.08	85.29	5.935 : 1
T_3 (10% poultry droppings)	73.93	1012.36	16.07	5965.76	94.69	5.892 : 1
T_4 (15% poultry droppings)	81.75	1069.54	16.98	6068.12	96.32	5.670 : 1

data collected on the desired parameters were subjucted to analysis of variance as described by Steel and Torrie (1980).

RESULTS AND DISCUSSION

The replacement of metabolizable energy (ME) and crude protein (CP) with 5, 10 and 15% of poultry droppings were 1.25, 2.60 and 4.08% ME and 4.94, 10.10 and 16.39% CP in dietary treatments T_2, T_3 and T_4 respectively.

Body weight gain : The average initial body weight per bird under different treatments (T_1, T_2, T_3 and T_4) was 77.48, 73.93 and 81.75 g respectively and the final body weight per bird was 1045.23, 905.41, 1012.36 and 1069.54 g respectively (Table 2). Statistically, there was no significant difference among the treatments. Al-Zujajy *et al.* (1979) and Sarker and Reza (1981) reported similar results in chicken.

In the present study though there was no significant variation among the treatments in body weight gain but apparently birds on treatments T_2, T_3 and T_4 in which 1.25, 2.60 and 4.08% ME and 4.94, 10.10 and 16.39% CP were replaced by 5, 10 and 15% poultry droppings, respectively, gained less than on treatments T_2 and T_3 but higher with treatment T_4 than that of the control diet.

Feed consumption and feed efficiency : Total feed consumption per brid with T_1, T_2, T_3 and T_4 were 6383.41, 5373.08, 5965.78 and 6068.12 g respectively. The average feed efficiency was 6.107, 5.935, 5.892 and 5.670 with T_1, T_2, T_3 and T_4 respectively (Table 2). Statistically there was no significant difference among the treatments but apparently birds utilized feed with slightly higher efficiency with the successive increase in the levels of poultry droppings in the rations T_2, T_3 and T_4 respectively. These findings are in agreement with the findings of Sarker and Reza (1981) who worked on chicken. They showed that with the increased level of poultry droppings, feed efficiency decreased gradually in growing pullets and broilers. In this experiment it was also shown that with the increased poultry droppings feed efficiency increased but feed intake was slightly lowered than the control diet.

Mortality : The mortality of the birds was 21.43% with T_1 and T_3 and was 14.28% with T_2 and T_4. From the post-mortem report it was ascertained that the mortality of the birds was not due to the effect of feeds.

Table 3. *Average feed cost per bird in different treatments during the experimental period*

Treatments	Cost per kg of mixed feed (Taka)	Feed cost per bird during the experimental period (Taka)*
T_1	5.86	34.22
T_2	5.08	28.46
T_3	4.77	27.30
T_4	4.42	26.82

*Bangladesh currency.

Cost of feed : The cost of feed per bird during the experimental period is shown in Table 3. The cost per bird was the highest for control died and gradually decreased with the increased level of poultry droppings in the ration. It was due to inclusion of poultry droppings in the rations in increased quantities.

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