

## PERFORMANCE OF BROILER FED ON VEGETABLE WASTES SUPPLEMENTED DIETS\*

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### ABSTRACT

An experiment was conducted for six weeks with two hundred forty day-old commercial broiler chicks of uniform body weight to study the growth performance fed on vegetable wastes supplemented diets. The chicks were divided randomly in to four experimental groups, viz. C, T<sub>1</sub>, T<sub>2</sub> and T<sub>3</sub> consisting of 60 chicks in each group. The control diet was prepared by using conventional feed ingredients. The starter and finisher diets for T<sub>1</sub>, T<sub>2</sub> and T<sub>3</sub> groups were prepared by supplementing the control diet with 50 per cent cabbage waste meal, 50 per cent cauliflower waste meal, and 50 per cent mixed (1:1) cabbage and cauliflower waste meal respectively. The mean body weight of birds were found to be 1722.33 ± 12.86, 1642.30 ± 19.54, 1644.33 ± 6.43 and 1584.33 ± 6.38 g for C, T<sub>1</sub>, T<sub>2</sub> and T<sub>3</sub> groups respectively. The average body weight gain of birds was found to be higher (P<0.01) in the control group. There was no significant difference in respect of body weight gain of birds among the experimental groups. The average total feed consumption of birds was found to be significantly higher (P<0.01) in the control group. The average total feed consumption was not found to differ significantly among the birds of T<sub>1</sub>, T<sub>2</sub> and T<sub>3</sub> groups. The feed conversion ratio was found to be highest in the birds of T<sub>2</sub> group (1.82). The feed conversion ratio in birds of the four experimental groups was not found to differ significantly (P>0.05). The total protein consumption was found to be highly significant (P<0.01) between control and the three experimental groups. However, no significant (P>0.05) difference could be seen in the average total protein efficiency ratio among the experimental groups. The cost of feeding per kg weight gain of birds on the basis of feed consumption was found to be cheaper in the three experimental groups of T<sub>1</sub>, T<sub>2</sub> and T<sub>3</sub> than the control (C) group.

**Key Words** : Broiler, Vegetable wastes, cost of feeding

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The poultry farming of India has grown into a well-organized and highly agro-based industry achieving an appreciable level of production. In spite of encouraging information on profitable broiler farming, a major drawback has been the exploitation involved towards meeting the feed cost, which may be as high as 60-70 percent of the total cost of production. Now-a-days shortage of

animal feeds is of immense concern especially for poultry production as they directly compete with human population. In India huge quantities of vegetable and fruit wastes are available at the processing factories and markets. India has emerged as the largest producer of fruits and second largest producer of vegetables in the world. The journey of vegetables from farm to table leaves a huge amount of nutrients on its way and its wastes being high in moisture content poses a great threat to the pollution of environment (air and water). The vegetable wastes of cauliflower and cabbage are the richest sources of protein, vitamin and mineral such as calcium, phosphorus and sulphur. They are also a rich source of iron. Moreover the cauliflower waste is an excellent source of pro- vitamin A. Therefore, an attempt has been made to ascertain on the possibility of use of these vegetable wastes as a component of diet for broiler production.

#### MATERIALS AND METHODS

An experiment was conducted for 6 weeks with two hundred forty day-old commercial broiler chicks of uniform body weight at the experimental poultry shed of Department of Animal Nutrition, College of Veterinary Science, AAU, Khanapara, Guwahati - 22. The chicks were divided randomly in to four experimental groups, viz. C, T<sub>1</sub>, T<sub>2</sub> and T<sub>3</sub> consisting of 60 chicks in each group by adopting Randomized Block Design. Again each experimental group had three replicates of 20 chicks. All together eight concentrate mixtures (1 starter and 1 finisher diets for C group, 3 starter and 3 finisher diets for T<sub>1</sub>, T<sub>2</sub> and T<sub>3</sub> groups) were prepared by following standard guidelines<sup>3</sup>. The control diet was prepared by using conventional feed ingredients (maize, rice polish, GNC, soyabean meal, fish meal, mineral mixture and common salt). The starter and finisher diets for T<sub>1</sub>, T<sub>2</sub> and T<sub>3</sub> groups were prepared by supplementing

the control diet with 50 per cent cabbage waste meal, 50 per cent cauliflower waste meal, and 50 per cent mixed (1:1) cabbage and cauliflower waste meal respectively. The starter diet was offered *ad libitum* to the chicks from 1 to 28 days of age and then the finisher diet from 29 to 42 days of age. Standard managerial procedures were adopted during the entire experimental period of six weeks. The fresh cabbage and cauliflower wastes were dried under natural sun shine and further dried in the hot air oven to reduce the moisture content up to a maximum level of 10 per cent. The dried leaves were crushed in high speed mixture grinder to a maximum of 20 mash size and were preserved in the sealed gunny bags. The chemical composition of cabbage and cauliflower waste meal were carried out as per the standard methods<sup>1</sup>

Body weight of individual birds was recorded at weekly intervals in the early morning prior to feeding with daily feed consumption records during the entire feeding trial. The experimental data were analyzed to determine the average body weight gain, feed consumption, feed conversion ratio (FCR), protein consumption and protein efficiency ratio. The economics of production was calculated in terms of cost of feeding per kg live weight gain. The data obtained from observations in this study were analyzed statistically<sup>9</sup>.

#### RESULTS AND DISCUSSION

The percentage of DM, CP, EE, CF, NFE, total ash, soluble ash, insoluble ash, Ca and P in the cabbage waste meal were recorded as 91.60, 18.00, 3.25, 10.00, 43.10, 25.65, 21.89, 3.76, 3.30 and 0.41 while same were 90.00, 17.50, 3.11, 11.00, 44.64, 23.75, 23.02, 0.73, 4.62 and 0.43 per cent in cauliflower waste meal respectively. The metabolizable energy and glucosinolate content of cabbage and cauliflower waste meal were found to be 2557.78 and 2592.82 k cal/g,

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and 0.037 and 0.032 per cent respectively. Other workers <sup>7, 8</sup> also reported similar findings of their experiments with cauliflower and cabbage waste as diets for broiler production.

The mean body weight of birds at 6<sup>th</sup> week of age were found to be 1722.33 ± 12.86, 1642.30 ± 19.54, 1644.33 ± 6.43 and 1584.33 ± 6.38 g for C, T<sub>1</sub>, T<sub>2</sub> and T<sub>3</sub> groups respectively. The average weekly growth of birds between treatment and control groups was not found to differ significantly (P>0.05). The average body weight gain of birds was found to be higher in the control group. There was no significant difference in respect of body weight gain of birds among the experimental groups. Inclusion of cabbage and cauliflower waste meal at 50 per cent level did not found to be affective in the growth performances of broiler<sup>7,8</sup>.

The average total feed consumption of birds was found to be significantly higher (P<0.01) in the control group. The average total feed consumption was not found to be significant (P>0.05) among the birds of T<sub>1</sub>, T<sub>2</sub> and T<sub>3</sub> groups. Feed consumption was reported to be decreased

significantly (P<0.01) on inclusion of 20 per cent cassava leaf-meal in broiler diets as reported by workers<sup>2</sup>. Another worker<sup>6</sup> also reported significantly (P<0.01) lower feed consumption in broilers fed with 20 per cent rape seed meal.

The feed conversion ratio was found to be highest in the birds of T<sub>2</sub> group (1.82). The feed conversion ratio in birds of the four experimental groups was not found to differ significantly (P>0.05). Other workers<sup>5,7,8</sup> also observed similar findings in their experiments.

The total protein consumption was found to be highly significant (P<0.01) between control and the three experimental groups. However, no significant (P>0.05) difference could be seen in the average total protein efficiency ratio among the experimental groups. Other workers<sup>4</sup> also reported similar findings of associative efficiency of rapeseed meal/sunflower seed meal in the broiler diets.

The cost of feeding per kg weight gain of birds on the basis of feed consumption was found to be cheaper in the three experimental groups of T<sub>1</sub>, T<sub>2</sub> and T<sub>3</sub> than the control (C) group.

Table 1. Effect of feeding vegetable wastes on broiler growth performance (g)

Treatments	Body weight (g)						
	1st week	2nd week	3rd week	4th week	5th week	6th week	7th week
C	100.00	150.00	200.00	250.00	300.00	350.00	400.00
T <sub>1</sub>	100.00	150.00	200.00	250.00	300.00	350.00	400.00
T <sub>2</sub>	100.00	150.00	200.00	250.00	300.00	350.00	400.00
T <sub>3</sub>	100.00	150.00	200.00	250.00	300.00	350.00	400.00

Table 2. Effect of feeding vegetable wastes on broiler feed consumption (g)

Treatments	Feed consumption (g)						
	1st week	2nd week	3rd week	4th week	5th week	6th week	7th week
C	100.00	150.00	200.00	250.00	300.00	350.00	400.00
T <sub>1</sub>	100.00	150.00	200.00	250.00	300.00	350.00	400.00
T <sub>2</sub>	100.00	150.00	200.00	250.00	300.00	350.00	400.00
T <sub>3</sub>	100.00	150.00	200.00	250.00	300.00	350.00	400.00

Table 1. Effect of different levels of vegetable waste on broiler performance

Treatments	Performance (%)		Feed Conversion Ratio			Mortality (%)	Live Weight (kg)	Cost of Production (₹/kg)
	Gain	Efficiency	Gain	Feed	Gain			
T1	100	100	1.00	1.00	1.00	100	100	
T2	100	100	1.00	1.00	1.00	100	100	
T3	100	100	1.00	1.00	1.00	100	100	
T4	100	100	1.00	1.00	1.00	100	100	

**CONCLUSION**

The diets of broiler could easily be supplemented with cabbage and cauliflower waste meal either singly or a combination (1:1) of them up to a level of 50 per cent in the profitable

production of broiler. The inclusion of vegetable wastes in the diets of broiler would markedly reduce the cost of production per kg gain in live weight of broiler.

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