



Evaluation of Poultry Feed Supplementation in Developing Poultry Birds

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ABSTRACT

This study evaluated that the supplementation provided as poultry feed at early developmental stages of poultry birds to showed significant growth and development. Such as water, protein carbohydrates fats minerals and vitamins are essential to life, growth, production. The morphological study of growth of chicks was taken in the laboratory circumstance when they were rearing. The nurture in laboratory situation was observed the development and growth on the basis 31 days of rearing of differentiate groups of chicks. In the present trialing, young chicks were provided with regular white grains as a conventional food along with formulated feed supplementation containing with whole molluscan animal and shell crush to the experimental groups and observed for 31 days in the laboratory situation exposed the admirable weight over the control chicks with hygiene. It was found that 40-50 % increase in weight was observed after 31 days indicating the overall growth development of the birds feed with additional diet for evolutionary study.

Keywords: Molluscan feed, Chicks, Bone and Minerals Composition.

INTRODUCTION

The major factors for successful poultry production are high genetic potential, balanced nutrition and health maintenance. On the other hand, the major demands are to produce high quality food at low to maintain feed hygiene, poultry health and welfare, and to reduce the environmental impact of poultry production, Nutritional needs in post AGP era of poultry production, (Panda *et al.*, 2005). Any animal needs to have all of its nutrient requirements and other aspects of ration satisfied. Freely ranging poultry will tend to select different items of diet according to the requirements. Intensive poultry production, care must be taken to ensure that all the animal's requirements are provided in the feed supplied. Commercial feed supply is often in pelleted form, and should be carefully formulated according to the dietary needs.

Feed formulation requires knowledge on one hand, of the nutritional requirements of the relevant livestock, and on the other hand the nutrient compositions of the different items of that are added to the diet.

At the present time, in most countries poultry meat from broilers is the cheapest form of carcass meat and the branch of animal production with the most consistence and rapid growth. However, the future outlook is far from secure as there are a number of issues, which could dramatically change the present situation.

Some nutrients such as water, protein carbohydrates fats minerals and vitamins are essential to life, growth, production, and reproduction in all classes of poultry. Indoors feeding of young or adult poultry, places full responsibility on the attendant to supply these same requirements in some form or another and in adequate but not excessive amounts.

MATERIAL AND METHOD

The study of evaluation of supplementary diet in poultry feed in early development of chicks in the laboratory condition was conducted on 20 chicks. 1-2 days old chicks from poultry hatchery were brought to laboratory and fed with veterinary department recommended food. The feeding was performed collectively for 3 days to acclimatize the chicks in the laboratory conditions. After 3 days they were placed into four groups containing 5 chicks in each cage.

Group-I: (Control)

This group was provided only normal food, which is used in household poultry production such as wheat, rice, jawar, maize etc., called as white grain here on in the text. The diet was fixed in weight as normally required and was increased as growing age of chicks.

Group-II: (Experimental-I 10 %)

The chicks in this group were provided with white grains added with 10 % of this feed, which contains dried molluscan whole animal, and crushed shells of freshwater bivalve mollusc *Lamelidians*. It was used as supplementary added food source.

Group-III: (Experimental-II 20 %)

The group of chicks was provided with same white grains along with 20 % of total feed of dried molluscan whole animal with crushed shells.

Group-IV: (Fish meal)

The chicks in this group were fed with white grains along with 10 % of this feed containing dried fishmeal. All the chicks were provided with 5-10 gm. of formulated food and they were fed twice a day. This formulated feed provided to the chicks depends on the weight of these chicks. This feeding was conducted for 30 days in the laboratory. All the chicks were weighed after every 3 days of interval in the early morning before feeding them.

During the period of 30 days, constant feeding to all chicks was done and development of chicks was observed such as how they live with each other, consumption of formulated food etc.

(I) Procedure for Estimation of Na, K, Ca by Digital Flame Photometer.

(II) Phosphorus by UV-VIS Spectrophotometer from Bone ash

Method: Determination of Phosphorus was performed by using UV-VIS Spectrophotometer. Sodium bicarbonate (NaHCO₃) of pH 8.5 is used as an extractant in this method, Olsen et al., (1954).

Preparation for Estimation from Bone ash: (Sudharmai Devi, 2004).

1. Bones were collected from experimental poultry birds (chicks) after sacrifice in the laboratory.
2. Dried the bones in oven at 50-60 °C.
3. Weigh 2 gm. of dried bones were crushed in pestle and mortar.
4. Kept the crushed bone in the Muffle Furnace at 500-550 °C. about 1 hrs.
5. Ash was cooled; collected ash then proceeded for acid dilution given in procedure for determination of Na, K, Ca, and P by Digital Flame Photometer and UV-VIS Spectrophotometer.
6. The bone ash was then provided moisture for avoiding effervescence, by adding 40 ml. of diluted HCL (1:1) and was then boiled in the water bath for digestion near about 20-30 min.
7. The digestion was completed and 10 ml. of dilute HCL (1:1) was added for further dissolution. Some ash was remaining in the beaker.
8. Then added 50 ml. of doubled distilled water and boiled into water bath for 10-15 min.
9. After digestion it was filter by Whatman filter paper no. 50 and filtrate was collected.
10. This filtrate was then transferred to the 100 ml. volumetric flask. Then it was diluted upto the mark

and suitable aliquots were used for the determination of Na, K, Ca, and P.

RESULTS AND DISCUSSION

The morphological observation of development of chicks was taken in the laboratory condition when they were rearing. The high correlation between body weight in first 7 days (1st week) and after 2nd and 3rd weeks of age give strong evidence of importance of good start for overall performance. During rearing of chicks, we provided various formulated diet to poultry birds.

Above 30 days of experimentation in the laboratory condition to observe the development and growth on the basis of following table shows day-by-day growth of differentiating groups of chicks.

The feed formulation for poultry diets (i.e. chicks, small flocks), the poultry industry owner wished to prepare home-mix feeds or feed formulation preparation for their birds.

Monitoring the fishmeal as a supplementary feed, for the moisture content of fishmeal is normally low in order to facilitate storage and transport. If the moisture content remains at the acceptable lower limits the meal will be more likely to have a low bacterial and or mold count. Antioxidants must be added to the meal to ensure proper stabilization during extended periods of storage, (Miles and Jacob 2003).

In the present experiment, young chickens were provided with normal white grains as a conventional food to group-I and the conventional food was added with 10 % and 20 % of the whole molluscan shell crush and the whole dried animal as the supplementary food to two respective groups- II and III and observed for 30 days. The observation in early development of chicks revealed the betterment of weight over the control chicks. It was found that 40-50 % increase in weight was observed after 30 days indicating the overall growth of the birds fed with additional diet.

Table-1 - Weight of chick during growth

Duration of Feeding to chicks	Weight in Grams			
	Group-I	Group-II	Group-III	Group-IV
1.	67.50	64.50	74.10	57.20
4.	68.90	63.80	73.40	58.10
7.	70.80	66.50	75.40	63.40
10.	76.30	68.20	81.10	67.90
13.	78.30	69.80	85.30	73.80
16.	82.20	76.80	87.60	98.20
19.	93.20	90.40	98.10	125.10
22.	105.70	108.10	112.30	140.20
25.	108.70	130.10	125.40	170.60
28.	111.90	145.80	140.50	185.30
31.	127.30	190.80	155.90	217.10

Table: 2 - Mineral composition in Bone

Groups	Group-I	Group-II	Group-III	Group-IV
Phosphorus(P)	0.072 ± 0.001870	0.122 ± 0.0015811	0.149 ± 0.00406	0.136 ± 0.003162
Sodium (Na)	0.115 ± 0.001870	0.300 ± 0.05244	0.385 ± 0.002549	0.220 ± 0.003122
Potassium (K)	0.315 ± 0.002236	0.375 ± 0.001581	0.285 ± 0.0015811	0.415 ± 0.00158
Calcium (Ca)	0.035 ± 0.0031622	0.075 ± 0.0031622	0.100 ± 0.003082	0.035 ± 0.003674

* Above value represent the minerals percentage in grams.

In the experiment performed with formulation of molluscs as 10 % and 20 %, addition in normal diet no deformities was observed. All the birds maintained in laboratory survived well and consumed the given diet completely. The daily weight gain recorded also showed favorable results in respect to proper growth of the birds. The whole molluscs crush with animal meat and shell was consumed and digested.

With respect to above observation in group-IV provided with fishmeal as supplementary feed, higher rate of development was observed but deformities such as spreading apart of legs in birds, loss of strength for fast movements, fragile of bone, feather loss, dizziness etc. were also observed. The addition of 10% and 20% of Molluscan feed as a whole animal was tested and the birds survived well with this addition. The birds from group - I fed on normal white grain showed less weight gain after 30 days than group - II and III, which was fed with additional Molluscan supplementary food.

Evaluation of mineral composition such as Sodium, Potassium, and Calcium in bones shows the rigidity of the birds. In the group-I very lower mineral composition and maximum level of all minerals in the group-II and group-III, rather than group-I and group-IV was observed.

The mineral contents of the bone reveals the effects of the diet composition and percentage value of some minerals such as Phosphorous, Sodium, Potassium, and Calcium. After the providing different diet for 30 days of experiment shows the variation in different groups. Percentage level of Phosphorous, Sodium, and Calcium was lower in group-I (fed with normal). The group- II and III shows higher level of Phosphorus, Sodium, Potassium, and Calcium, where as the group-IV fed with fish meal as a formulated diet shows just below that of the value found in group- II and III. Above calculated value of minerals in gram percentage shows that the formulated diet reflects in the development of chick and deposition of various minerals in the body. (Schreiweis *et al.*, 2003), found that bone mineral density and bone mineral content of the humerus and tibia of live hens decreased linearly when hens consumed diets with decreasing concentrations of calcium and hence bone breaking force, stress and modulus of elasticity decreased linearly. There was no significant effect of the sources tested on feed intake, weight gain, apparent

metabolizable energy, and apparent and true calcium availability. While the calcium sources tested did not affect tibia bone length and diameter this effect was significant when bone ash was considered. There were differences in the effect of the source on excreta soap formation. The calcium carbonate that produced the least excreta soap is the most biologically available source for calcium, bivalve, and periwinkle shells can be considered equally good calcium sources for use in poultry diets in Nigeria, (Ajakaiye *et al.*, 2003).

The observations on the basis of comparative study of all groups by providing supplementary Bionutrition as formulated diet in poultry feed in early development of chicks was favorable to develop the mineral composition in Bones And morphological observation shows the acceptable effect of formulated diet on development of chicks in the 30 days in the laboratory conditions.

CONCLUSION

The present study on development of chick during early condition of development was undertaken by supplementation of different formulation of bionutrients viz. Growth and development, mineral contents of Bones For this purpose twenty chicks were selected and were tested for their high viability. These twenty chicks are divided into four groups, one group of five chicks was kept as a control, and another three groups of five chicks were used as testing sample for analysis.

The result obtained from above analysis was proved good, as mineral content like Na, K, Ca, and P of bone showed significance increase in sample fed with supplementary food. It shows that the provided food material is appropriate and beneficial without causing any disorders. In the experimental period it can be concluded the formulated food material is optimum and proper for development of hen's chick.

Conflict of Interest

The author declares that there is no conflict of interest.

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