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Effect of growth promoter on the performance of intake and body weight of broiler chicks

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Abstract
This investigation was being conducted at poultry research centre of Udai Pratap Autonomous College, Varanasi (U.P.) was carried out on one week aged 98 chicks in December 2012. The broiler chicks were divided into four group having 23, 25, 25 and, 25 chicks in I, II, III, and IV group respectively. The dose of the Growth promoter provided to the chicks with the drinking water was 1.5 ml, 2.5 ml, and 3.5 ml/liter fresh water, in I, II, and III group respectively, IV group was the control group of this experiment. The following trains were observed during experimental period, Feed intake, Water intake, Body weight. The average intake/Day/chick was higher in IV group (1760gm) while it was lower in IV group (1527gm). The group-I show (110gm). Feed intake during first week of age and found to be statistically significant. Similarly water intake during this experimental has been found 4410ml, 3707ml, 3989 ml and 3839 ml in I, II, III and IV group respectively. It was highest in I group. The variation in water consumption among these four groups were found to be non significant. The data indicates that the initial body weight of experimental chicks during 1st week of age ranged between 169 gm to 180 gm. The highest body weight has been recorded in II group while it was lowest in III group. On the basis of above results we can say that the growth promoter had the non significant effect on intake and significant effect on body weight.

Keywords: Feed intake, water intake, body weight, growth promoter, broiler chicken

Introduction
The industry has provided direct employment to about 9 lakh people and given rise to many allied industries like feed, equipment, and pharmaceuticals, etc. Fisheries account for 50 per cent of meat production followed, by 30 per cent thought beef, 8 per cent by sheep and goats and 6 per cent each by pig poultry industries. Poultry meat is an important source of high quality proteins, minerals and vitamins to balance to human diet. Specially developed breeds of chicks meat (broiler) that has ability of quick growth and high feed conversion efficiency are now available. Depending on the farm size, broiler farming can be the main source of family income, can provide subsidiary income and gainful employment to farmers throughout the year. Broiler are marketed at an age of around 42 days. These are chickens reared for meat production. Broiler production is a short-term enterprise. Therefore, a number of batches can be raised within a year, or it could be part time job. A number of strains exist in various regions of the country for broiler production, which have a gentic potential to achieve 2.0 kg. live weight at the age 42 days. Allthough India has all necessary input for the healthy growth of poultry famring, its contribution to the total livestock output in only about 10 per cent, this indicates some crises in the activity. In the livestock sector, poultry is the most efficient converter of plant products into high quality animal protein. Broiler farming has been given importance in the national policy and a number of broiler development scheme have been implemented successfully, with financial assistance and support of the central/state governments and poultry corporations. As a result, considerable progress has been made in broiler production during the '80s and '90s. High quality chicks equipment, vaccines, medicines and market infrastructure are now available in our country.

The effects of dietary supplementation of five growth promoters were evaluated by Afshin Zakeri and Pedram (2011) [1] in broiler chicken by their effects on humoral immunity, growth performance, mortality and feed intake increase. Broiler chicks were offered semi-purified diets containing crystalline essential amino acids, including proline, supplemented with various nitrogen sources. Individual final body weights, food consumption and food conversion efficiencies (FCE) were measured by Lee & Blair (2007) [2]. Supplementation of trace minerals with a large safety margin in broiler chickens has resulted in a high level of mineral excretion that ends up in the environment was conducted by Y. M. Bao, M. Choct, P. A. Iji and K. Bruerton (2007) [7]. It is possible to use these lower levels of organic trace minerals in broiler diets to avoid high levels of trace mineral excretion.

The effect of phytase on the performance, AMEn, and the ileal digestibility of N and amino acids was investigated by Namkung and Leeson (1999) [5] **t**he diet with supplemental phytase had a higher compared with the control diet. The effect of amino acid deletion assay, a protein efficiency ratio (PER) assay, and a slope-ratio growth assay were used to establish the limiting order of AA, and to determine the effects of microbial phytase on protein utilization in corn gluten meal (CGM) fed to chicks Peter, Y Han, and S D Boling-Frankenbach (2000) [6] observed that weight gain and gain: feed increased linearly as a function of protein intake, but phytase supplementation had no effect on weight gain or gain:feed slopes. These results indicate phytase did not increase either CP or AA utilization in CGM for young chicks. The effect of high dietary levels of soluble sources of Zn on tissue Zn, Cu, and Fe concentrations as influenced by two methods of oral Zn administration by M. Sadoval, P R Henry, R C Littell, and R D Miles (1999) [3]. The effect was observed that feed intake was similar among treatments. Bone Zn was increased by Zn source and was greater. The effect of phytase on the performance, AMEn, and the ileal digestibility of N and amino acids was investigated by Namkung and Leeson (1999) [5]. The diet with supplemental phytase had a higher AMEn compared with the control diet. The experiments were conducted by Mendonca & Jensen (1989) [4] with male broiler chickens from 3 to 6 weeks of age to determine the effect of dietary protein content on the requirement for sulphur amino acids (SAA). The SAA requirement for body weight gain increased as dietary protein content increased.

Materials and Methods

The present investigation was designed and carried out to study the performance of commercial broiler fed with different levels of Growth-Promoter with drinking water. The experiment was being conducted at poultry research centre of Udai Pratap Autonomous College, Varanasi (U.P.).

1. Experimental chicks and their management

Ninety eight chicks (ven cob) were tagged for identification individually weighted and distributed into four groups Chicks were housed grouped wise in separated pan under identical feeding and management conditions. 24 hours light was provided to the chicks during experimental period.

The name and number of chicks for each group and the name of ferm from where chicks were purchased are given, No. of groups 4 group and No. of chicks (I-23 chicks, II-25 chicks,III-25 chicks, III-25& IV-25 chicks). The chicks were purchased in lot from R. Conix Hatcheries Pvt. Ltd. Lahartara Varanasi (U.P.).

2. Preparation of experimental diets

Group I -Usual commercial feed + Growth promoter (promoter @1.5ml/liter with fresh water), Group II -Usual commercial feed+ Growth promoter (Promoter @ 2.5ml/liter with fresh water), Group III - Usual commercial feed + Growth Promoter (Promoter @3.5ml/liter with fresh liter), Group IV -Usual commercial feed.

3. Observation to be recorded-I. Average feed intake up to 5 weeks, II. Average water intake up to 5 weeks, III. Body weight of experimental chicks, IV. Mortality rate up to 5 weeks of age.

4. Procurement of feed and Growth promoter

Both starter and finished rations were purchased from Ritu medical and poultry feed S-17/331 "O" Vijay Nagar, Maldahiya Varanasi, and growth promoter G-promoter in liquid from was procured from the local market and manufacture by Tetragon Chemie Pvt. Ltd. IS-40 Bangalore. Growth promoter has following composition (Table 1) as declared by the manufacture.

Table 1: Growth Promoter (500 ml) contains

S. No.	Constituents	Amount
1	Methionine activity	127.6 gm
2	Choline chloride	63.125 gm
3	Lysine Hydrochloride	459.00 mg
4	Sodium	154.16 mg
5	Phosphorus	154.16 mg
6	Magnesium	595.4 mg
7	Zinc	215.7 mg
8	Ferrous	223.4 mg
9	Copper	158.8 mg
10	B6	100 mg
11	B12	500 mcg
12	Folic acid	33 mg

Plan of Feeding

Weighted quantity of feed was provided in separated contained daily at 8.00 am to the chicks of respective groups. Residues left were weighted and recorded daily. Net feed consumed by the chicks of each group was calculated throughout the experimental period. Similarly fresh water was provided to the chicks during the experimental period and observation related to the water intake was also taken timely during this experiment. Similarly mortality was also recorded in each group during experimental period. Feed conversion ratio of each group was calculated with the help of total feed intake and body weight gain during experimental period.

Result and Discussion

The present section describes the effect of Bio-promin on the performance of broiler chicks. All the experimental chicks were maintained on well balanced diet. The feeding pattern was same with different dose of Bio-promin for all the groups under observation. In this study feed was given to all experimental chicks according to their requirement in their early parts of life.

Feed intake

Feed intake in all experimental groups has been recorded during this experiment. The Total feed intake by chick in each group for experimental period is shown in (Table 2). The pattern of feed intake in each group have been shown in (Fig. 1). The Total feed intake/chick was higher in I group (1760 gm) with 1.5 ml of Bio-promin while it was lower in IV group (1527 gm). The Total feed intake was (1760 gm) in group I, (1572) gm in group II, (1647 gm) in group III and (1527 gm) in group IV respectively during first to 5^{th} week of experiment. The data related to feed intake has been statically analysed with the help of R.B.D and the analysis of variance (ANOVA) has been presented in Table 3. The variation in feed consumption among these five experimental groups was found to be statistically Non- significant.

Table 2: Average feed intake of chicks during experimental period in different groups (in kg/chicks/week)

Group/ Week	I Week	II Week	III Week	IV Week	V Week	Total intake	Average
G I	0.110	0.194	0.326	0.476	0.654	1.760	0.352
G II	0.106	0.172	0.288	0.424	0.582	1.572	0.3144
G III	0.115	0.189	0.302	0.449	0.592	1.647	0.3294
G IV	0.081	0.173	0.285	0.404	0.584	1.527	0.3054

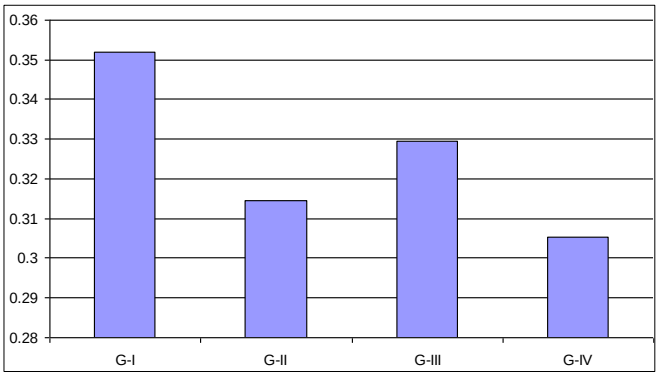

Fig. 1: Feed intake of during experimental period in different groups (gm)

Table 3: ANOVA Table for feed intake

Source of Variation	Degree of Freedom	Sum of square	Mean Sum of Square	F. Variance	F Value 5%	F Value 1%
Week	4	0.6248	0.1562			
Group	3	0.0117	0.0039	0.3939	3.49	5.95
Error	12	0.1196	0.0099			
Total	19	0.7561	-			

Water intake

Water intake in all experimental groups has been recorded during this experiment. Similarly water intake during this experiment has been found 882.00 ml, 741.4 ml, 797.80 ml, and 767.80 ml in I, II, III, and IV group respectively. It was highest in first experimental group with 1.5 ml of Bio-promin and water intake was lowest in fourth group (controlled group) found to be non-significant.

Similarly feed intake, water intake (Table 4) was also increased with increasing age (Fig. 2). During first week water intake was 457 ml while it was 1521 ml during fifth week of experiment in I group. This trend was similar for all (ANOVA) experimental groups (Table 5).

Table 4: Average Water intake of chicks during experimental period in different groups (in lit/chick/week)

Group	I Week	II Week	III Week	IV Week	V Week	Total intake	Average
G I	0.457	0.546	0.632	1.254	1.521	4.41	882.00
G II	0.409	0.509	0.585	1.048	1.156	3.707	741.40
G III	0.426	0.539	0.586	1.198	1.24	3.989	797.80
G IV	0.424	0.525	0.586	1.092	1.212	3.839	767.80
Total	1716.0	2119.0	2389.0	4592.0	5129.0	1594.5	

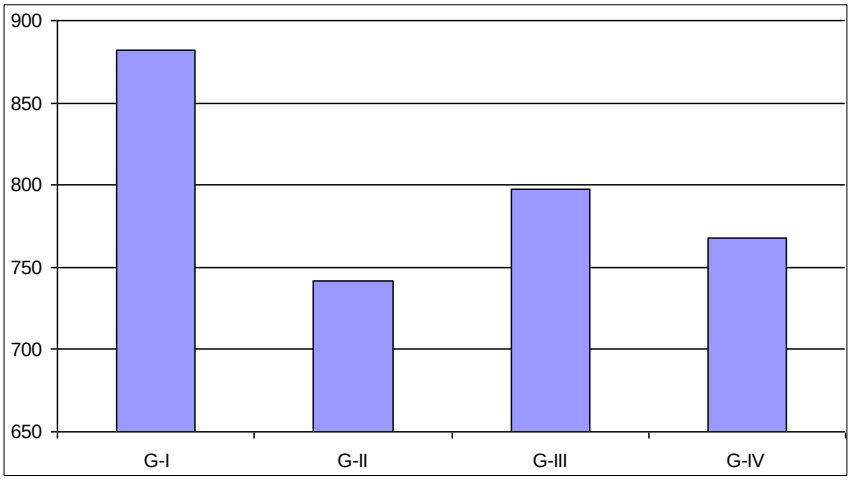

Fig 2: Water intake of during experimental period in different groups (ml)

Table 5: ANOVA Table for Water Intake

Source of Variation	Degree of Freedom	Sum of square	Mean Sum of Square	F. Variance	F Value 5%	F Value 1%
Week	4	2.4216	0.6054			
Group	3	0.0558	0.0186	4.2272	3.4900	5.9500
Error	12	0.0536	0.0044			
Total	19	2.531				

Body weight

Chicks were weighted at one week interval from first day to end of the experiment. The average live weights have been given in (Table 6). The pattern of live weight given in each experimental group have been shown in (Fig. 3).

Initial body weight of chicks ranged between 169.00 gm to 180.00 gm. Similarly the live weight of broiler at the end of these experiments ranged between 971.00 gm to 1001 gm. The highest body weight has been recorded in II group with 2.5 ml of growth promoter while it was lowest in I group with 1.5 ml of growth promoter. The live weight of (ANOVA) experimental (Table 7) chicks during this study has been statistically analysed and found significan.

Table 6: Average Body weight of chicks during experimental period in different groups (in gm/chick/week)

Group	I Week	II Week	III Week	IV Week	V Week	Total intake
G I	0.180	0.352	0.464	0.753	0.986	2.735
G II	0.170	0.359	0.510	0.785	1.001	2.825
G III	0.169	0.360	0.509	0.750	0.971	2.759
G IV	0.177	0.357	0.523	0.769	0.973	2.799
Total	0.696	1.428	2.006	3.057	3.931	11.118

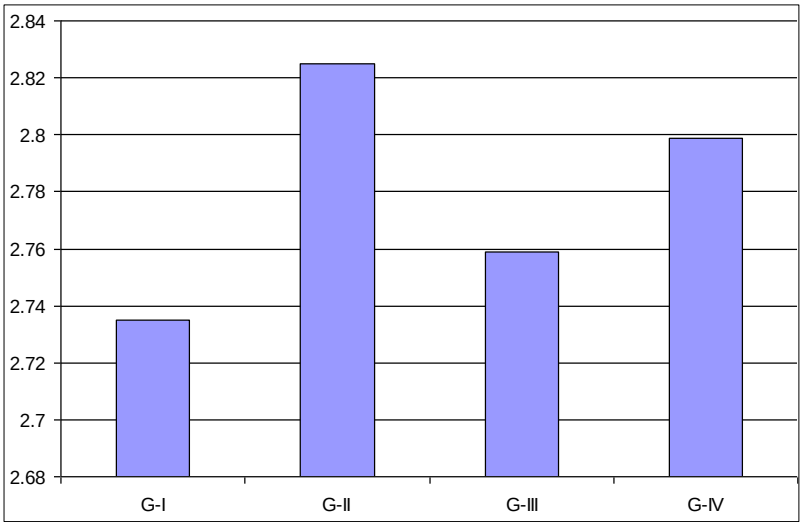

Fig 3: Average Body weight gain of during experimental period in different groups (gm)

Table 7: ANOVA table for Body Weight

Source of Variation	Degree of Freedom	Sum of square	Mean Sum of Square	F. Variance	F Value	
					5%	1%
Week	4	1.6559	0.4139			
Group	3	0.0010	0.0003	3	3.4900	5.9500
Error	12	0.0019	0.0001			
Total	19	1.6588				

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