

Impact of Different Levels of Manganese And Ascorbic Acid on The Growth Performance of Broiler Chicks

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Abstract. The present study was carried out at Sunderesan School of Animal Husbandry and Dairying of SHIATS, Allahabad ,Uttar Pradesh ,India on 75 Day-Old Broiler Chicks (DOBC) which were randomly divided into five groups. Data on body weight and Feed Conversion Ratio (FCR) of broiler chicks from day old to five weeks of age, were recorded and statistically analyzed. The result indicated a significant effect of dietary inclusion of manganese and ascorbic acid on the body weight . However the Feed Conversion Ratio(FCR) of caged broilers was not significantly influenced by dietary inclusion of manganese and ascorbic acid in the ration of broiler chicken.

Keywords: manganese , ascorbic acid , broiler chicks.

1. Introduction

Broilers have been selected for increased meat yield ,better feed conversion and high growth rates for many decades. Fifty years ago it took over 12 weeks to raise a 1815 g broiler. Through advances in genetic selection and nutrition, a 2268 g broiler can now be raised in 6 to 7 weeks. Genetics and nutritional improvements in broiler production have been extremely important to the efficiency of poultry meat production; however, the full genetic potential of broilers cannot be reached unless the proper environment is maintained in the broiler house. The fast growing, modern broiler lines are more dependent on proper environmental conditions than birds from lines raised just a few years ago.

Deficiency of manganese in the diet of young growing chickens is one of the causes of perosis and of thin-shelled eggs. Most poultry feed are poor sources of manganese. Perosis caused by manganese deficiency is exacerbated by excess calcium and phosphorus in the diet. Birds reared on wire or slatted floors are more susceptible to perosis than those reared on litter. All commercial poultry diets are now supplemented with a source of available manganese (manganese sulfate). Because manganese deficiency is now rare, other possible causes should be considered when perosis is encountered hatchability of broiler chicks are more susceptible to changing environmental conditions.[1] In particular, the stress depressed feed intake, weight gain and increased mortality rates among broilers.[2] A possible approach to counteracting the negative effects of cold stress among chicks could be the supplementation of birds with ascorbic acid in broiler ration. ascorbic acid plays a major role in the biosynthesis of corticosterone.[3] a primary glucocorticoid hormone involved in gluconeogenesis to enhance energy supply during stress.[6]

2. Materials And Methods

Day old 75 broiler chicks of same hatch were procured and housed in battery type cages consisting of fifteen chicks in each to provide recommended floor space of 0.75ft² in cage per broiler in small animal

laboratory of the Sundaresan School of animal husbandry and dairying, SHIATS. Chicks were provided with self-prepared ration as per following treatments combinations:

T0= control .

T1= T0+400 mg ascorbic acid + 30 mg manganese.

T2= T0+400 mg ascorbic acid + 60 mg manganese.

T3= T0+400 mg ascorbic acid + 90 mg manganese.

T4= T0+400 mg ascorbic acid + 120 mg manganese.

The standard broiler starter ration contained CP:22 and ME:2900 and broiler finisher ration contained CP:19 and ME:3000. [5]

3. Statistical Analysis

Data on various parameters weekly body weight and feed intake were collected, tabulated and analyzed statistically using analysis of variance techniques as per [8]

4. Results And Discussion

4.1. Average body weight of broiler

In general the body weight of day old broiler chicks ranged from 42.6 to 45g. The mean bodyweight of DOC in different treatment viz. T0 to T4 was 42.6, 43.6, 42.6, 45 and 43g, respectively. The differences in mean body weight of the chicks were not significant. The results pertaining to the body weight of DOC contained in Table 1 indicated that broiler in T3 had the highest body weight 45(g) but it did not significantly differ from other treatments. And Irrespective of treatments in general the body weight of the broilers at fifth weeks of age ranged from 953.3 g to 1282 g. The mean body weight at fifth weeks of age in different treatments viz. T0 to T4 were 953.3 , 1223 , 1159.3 , 1282 and 1202.3g, respectively. The differences in mean body weight of the broilers of fifth weeks of age between treatments were significant Table1. Highest mean body weight of broilers at fifth weeks of age was recorded in T3 (1282 g) followed by T2, T4. And lowest mean was observed in T0 (953.3g). The differences in these values of body weights were found significant indicated there by significant effect of treatments on body weight of broilers. The body weight of broilers at fifth weeks of age in T1, T2, T3 and T4 were found non-significant being at par. The control (T0) is the lowest treatments in body weight of broilers at fifth weeks of age registered significantly compared to all treatments. . The results tally with the findings of [7] and [4].

4.2. Average feed Conversion Ratio of broilers

In general the FCR of the broilers ranged from 1.9 to 2.0 .The mean feed Conversion Ratio FCR(feed required for per kg gain in weight) in different treatments viz. T0 to T4 was 1.92, ,2.0 ,1.97 ,1.9 and 2.0, respectively. The differences in mean feed Conversion Ratio (FCR) of the broilers were not significant indicating thereby a non significant effect of dietary inclusion of manganese and ascorbic acid in the ration of broiler chicken. The results pertaining to the feed Conversion Ratio (FCR) contained in Table1 indicated that broiler in T3 registered the best feed Conversion Ratio (FCR) compared to all other treatments . however it was not significantly different from other treatments being at par. The results tally with the findings of [9] and [10].

Table 1 .Mean values different parameters:

Treatments	PARAMETER		
	body weight of DOC age(g)	body weight at fifth week of age(g)	feed Conversion Ratio (FCR)
T0	42.6	953.30	1.92
T1	43.6	1223.00	2.0
T2	42.6	1159.30	1.97
T3	45	1282.00*	1.9*
T4	43	1202.30	2.0
RESULT	NS	S	NS

S= Significant.

NS= Non-significant.

5. Conclusion

Based on results it was concluded that diets supplemented with ascorbic acid and manganese had significant effect on the growth performance of broiler. All treatments were significant compared to NRC standard (control). And the other treatments were significant compared to different levels from ascorbic acid and manganese.

The treatment(T3 = T0+400 mg / ascorbic acid + 90 mg / manganese) was better than (control) and other treatments. In general All treatments(T1,T2,T3,T4) were better compared to NRC standard control (T0) and enhance performance of broilers. The results indicated to Possibility used dietary supplementation of manganese and ascorbic acid to enhance performance of broilers chicks.

6. References

- [1] Nolan, J., Hinch, G., Twaites, J. and Walkden-Brown, S.(1999). Constrains to animal production, Chapter 2: Climati constrains, Lecturer Paper 12, *Animal Science Group* Publisher, Australia
- [2] Ayo, J. O., Oladele, S. B. and Fayomi, A. (1996). Effect of heat stress on livestock. production:A review. *Nigerian Veterinary Journal*, 58-68, Special edition, 1(1): 58-68.
- [3] Bains, B. S. 1996. The role of Vitamin C in stress management *World Poultry*, 12(4):38- 41.
- [4] Balog , B. D. Kidd, W. E. Huff, G. R. Huff, N. C. Rath,(2003).USDA/ARS/ PP& PSR , Fayetteville and N. B. Anthony, Department of Poultry Science, University of Arkansas (September 2003) Effect of Cold Stress on Broilers Selected for Resistance or Susceptibility to Ascites Syndrome. *Poultry Science* 82:1383-1387.
- [5] B.I.C,(1992).Nutrient Ruquirement for Poultry.Bureau of Indian Standards.I.S.,13574.
- [6] Andarson, R. D. (1986). Anatomy and physiology of farm animals, Chapter 32 *Endocrinology*, Page 481-507, Lea & Febiger Publisher, Philadelphia, USA.
- [7] Ozkan, S., Y. Akbas, . Altan, A. Ayhan and K. Ozkan (2003). The effects of short-term fasting on performance traits and rectal temperature of broilers during the summer season. *Brit. Poultry Sci.*, 44:88–95.

- [8] Sendecor ,C.W.And Cochran,W.G (1994) Statistical Method .Lowa State University Press, Ames.
- [9] Smith, M.O., LL Sherman, LC. Miller, and K.R Robbins,(1995). Relative biological availability of manganese from manganese proteinate, manganese sulfate, and manganese oxide in broilers reared at elevated temperatures .*Poultry Sci.* 74:702-707.
- [10] Takahashi K., Akiba Y. and Horiguchi, M.(1991). Effects of supplemental ascorbic acid on performance organ weight and plasma cholesterol concentration in broiler treated with propylthiouracil, in *British Poultry Science* 32 (3):545-554.