



Effect of different levels of Amla powder (*Emblica officinalis*) on the performance of broilers

AJAI KUMAR TIWARI, NEERAJ, KULADIP PRAKASH SHINDE AND SHAILESH KUMAR GUPTA

ABSTRACT : Amla powder (*Emblica officinalis*) is an important source of vitamin C. This research was done at Sundaresen School of Animal Husbandry and Dairying, Sam Higginbottom Institute of Agriculture, Technology and Sciences, Allahabad, Uttar Pradesh. The aim of this study was to determine weekly body weight and weekly feed intake supplemented with vitamin C powder in following different levels. A total of 45 day old chicks (DOC) of same hatch were distributed into five groups *i.e.* T₀ (Control), treatments T₁, T₂, T₃ and T₄ with three sub groups comprising of three birds. T₀ (control) were fed with standard ration recommended by NRC. The birds of T₁, T₂, T₃ and T₄ were supplemented ration with supplemented with 25g, 50g, 75g and 100g Amla powder /kg feed. In conclusion concluded that there was a beneficial effect of Amla powder supplementation in the diet of broilers on body weight and feed intake of broilers. From economic point of view ration supplemented with vit c @ 100g/kg feed was found the best compared to all the treatments.

KEY WORDS : Amla powder, Growth, Body weight, Broiler, Chicks

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INTRODUCTION

Amla (*Emblica officinalis*) powder is an important source of vitamin C. Amla causes growth of all age group Konca *et al.* (2008) reported that body weights, feed intake and feed conversion ratio, slaughter weight, carcass yield, portions, composition and thigh and breast

pigmentation of the turkeys were not affected by ascorbic acid ($p>0.05$). Also, shank and tibia bone characteristics were not affected by ascorbic acid ($p>0.05$). Elsevier (2009) conducted two experiments to evaluate the effect of dietary ascorbic acid supplementation on the performance of broiler chickens during the hot month (March – May) of the year in Zaria, Nigeria. He reported that chicken diets with 200mg ascorbic acid per kg are necessary. The hot and wet climatic conditions in the tropics limit the high performance and survival of broilers (Vathana, 2002). Lohakare *et al.* (2005) conducted an experiment to evaluate the efficacy of supplemental ascorbic acid on the performance of broiler chickens and reported that supplementation of ascorbic acid at 200 ppm is beneficial for improving the performance and immunity and for exploiting the full genetic potential of the commercial broilers. The vitamin C supplementation was

MEMBERS OF RESEARCH FORUM

Address for correspondence :

Kuladip Prakash Shinde, Division of Livestock Production and Management, ICAR- NDRI, KARNAL (HARYANA) INDIA
Email : kuls164@gmail.com

Associated Authors' :

Ajai Kumar Tiwari and Neeraj, Department of Animal Nutrition, Sam Higginbottom Institute of Agriculture Technology and Sciences, ALLAHABAD (U.P.) INDIA
Email : ajaitiwari111222@gmail.com; neeraj.neeraj@shiats.edu.in

Shailesh Kumar Gupta, Division of Livestock Production and Management, ICAR- NDRI, KARNAL (HARYANA) INDIA
Email : sgshailesh786@gmail.com

effective in improving performance of layers under heat stress conditions (Khan and Sardar, 2005). Ahmed (2008) conducted to study the effect of ascorbic acid (A.A) on broiler chicken and fasting broiler under heat stress. The effect of feed restriction was not significant, because all groups were affected by temperature elevation, which is associated with decrease in feed consumption. Ali *et al.* (2010) reported the effects of Vitamin C and electrolyte on growth and meat yield of broilers in a hot humid environment. Abioja *et al.* (2012) studied to determine effects of vitamin C on growth performance in 216 *Anak 2000* broilers chickens. The broilers, *Anak 2000* at d 28 were allotted to two groups. Addition of 500 mg vitamin C per liter water increased significantly the relative weights of breast meat compared to 0 mg vitamin C.

MATERIAL AND METHODS

The present study was carried out at Sundaresen School of Animal Husbandry and Dairying, Sam Higginbottom Institute of Agriculture, Technology and Sciences, Allahabad, Uttar Pradesh, India, to determine weekly body weight and weekly feed intake supplemented with vitamin C powder in following different levels. A total of 45 day old chicks (DOC) of same hatch were procured and randomly distributed into five groups *i.e.* T₀ (Control), treatments T₁, T₂, T₃ and T₄ with three sub groups comprising of three birds in each to serve as replicates. Feeding of the broiler was as follow.

Group	Feeding of broilers
T ₀ (control)	Standard ration as per NRC
T ₁	Ration supplemented with 25g Amla powder /kg feed
T ₂	Ration supplemented with 50g Amla powder /kg feed
T ₃	Ration supplemented with 75g Amla powder /kg feed
T ₄	Ration supplemented with 100g Amla powder /kg feed

All broilers were offered water ad lib at all time. They were housed in metal type cages in small animal laboratory. A bulb of 25 watt was left on in each cage. Broilers were given floor space @ 0.75 sq ft. Each was managed under identical management condition. The data on feed intake, body weight were recorded weekly to determine gain in weight and FCR. (Table A) The data on various parameters were recorded, tabulated and statistically analyzed using analysis of variance (ANOVA)

Table A : Ingredient and nutrient composition of experimental diet (%DM)

Ingredients (%)	Broiler starter (0 – 21 day)	Broiler finisher (22 – 42 days)
Maize	60.00	63.00
Ground nut cake	23.35	18.00
Fish meal	13.00	15.00
Mineral mixture	3.00	3.00
Common salt	0.50	0.38
Vitamine premix (vit. A,B ₂ ,D ₃)	0.05	0.02
Amprosol	0.05	0.05
Nuvimin	0.05	0.55
Nutrient composition		
Moisture (%)	6.29	6.22
Crude protein (%)	22	19
Total ash (%)	8.02	9.34
Crude fibre	5.5	6.00
ME (Kcal/kg)	2900	3000

technique as per Snedecor and Conhran (1994).

RESULTS AND DISCUSSION

The data on body weight of chicks and feed intake of the broilers are presented in Tables from 1 to 4. The recorded body weight at different weeks and Anova table were presented in Table 1 and 2. The non-significant difference were found between old chicks indicated that the random distribution of the chicks among the different groups of treatments of the experiments was proper and unbiased. The significant difference were found between old chicks at first week indicated the significant effect of Amla powder supplementation in the diet on body weight of chicks at first week of age. The broilers in T₄ registered significantly highest body weight compared to other treatments. The differences in body weight of broilers in T₁, T₂ and T₃ were non-significant being at par. The broilers in T₀ (control) registered significantly lowest body weight at one week of age. The results revealed that there is a beneficial effect of supplementation of Amla powder in the diet of broilers on body weight. These results are in agreement with Ahmed (2008). At second week also significant differences was observed. The broilers in T₄ registered significantly highest body weight. However it was found at par with body weight of broilers in T₁. The body weight of broilers in T₁, T₂ and T₃ were also found at par being

non-significant difference between the treatments. The results showed a beneficial effect of supplementation of Amla powder on the diet of broilers. Results tally with the finding of (Ahmed, 2008). At third week also significant differences was observed. The broiler in T₄ registered significantly highest body weight compared to other treatments. The body weight of broilers in T₁, T₂ and T₃ were non-significantly different being at par. The results of the study indicate a beneficial effect of supplementation of Amla powder in the diet of broilers on body weight. The results are in the line reported by (Ahmed, 2008). At fourth a significant effect of treatments on body weight of chicks at four weeks of age. The body weight of broilers in T₄ registered significantly highest body weight compared to all other treatments. However, the body weight of broilers in T₁, T₂ and T₃ did not differ significantly being at par. The results indicate a beneficial effect of Amla powder

Table 1 : Average weekly mean body weight of broiler chicks (g) of different treatments

Weeks	Body weight of broilers in different treatments					Mean
	T ₀	T ₁	T ₂	T ₃	T ₄	
Day old	43.33	43.66	42.00	43.33	44.60	
1	103	103.66	103.66	110.60	111.60	106.50
2	226.33	242.66	233.33	265.33	266.33	246.79
3	384.33	420.00	422.33	506.00	515	449.53
4	622.33	632.33	790.66	698	823	713.26
5	909	922.60	1001.00	1080.30	1194.60	1021.5
Mean	448.99	464.25	510.19	532.04	582.04	

Table 2 : ANOVA for the data on weekly body weight of per broiler

Source of variation	d. f.	S.S.	M.S.S.	F. Cal.	F. Tab. 5%	Result	S.E. (±)	C.D. (P=0.05)
Replications	4	3639529.8607	909882.4652	450.351	3.01	S	28.428	61.4046
Treatments	4	122653.0042	30663.2511	15.177	3.01	S	28.428	61.4046
Error	16	32326.1839	2020.3865	-	-	-	-	-
Total	24	3794509.0488	-	-	-	-	-	-

Table 3 : Average weekly mean feed intake (g.) per-broiler of different treatments

Weeks	Feed intake broilers in different treatments					Mean
	T ₀	T ₁	T ₂	T ₃	T ₄	
1	66.60	124.60	141.30	140.00	129.00	120.3
2	226.56	273.60	290.00	257.30	373.30	284.16
3	253.70	455.00	400.00	510.00	526.30	429
4	537.00	620.00	607.00	596.00	623.96	596.8
5	630.00	800.00	790.00	795.00	760.00	755
Mean	342.78	454.64	445.66	459.66	482.52	

Table 4 : ANOVA for the data on average weekly mean feed intake (g.) per broiler of different treatments

Source of variation	d. f.	S.S.	M.S.S.	F. Cal.	F. Tab. 5%	Result	S.E. (±)	C.D. (P=0.05)
Replications	4	1251914.3623	312978.5906	164.616	3.01	S	27.577	59.5670
Treatments	4	59249.4351	14812.3588	7.791	3.01	S	27.577	59.5670
Error	16	30420.3083	1901.2693	-	-	-	-	-
Total	24	1341584.1057	-	-	-	-	-	-

supplementation on body weight of broilers. At fifth a significant effect of treatments on body weight of chicks at four weeks of age. Significantly highest body weight of broilers was recorded in T₄ compared to all other treatments. The broilers in T₁, T₂ and T₃ registered significantly higher body weight than control group. However, the body weight of broilers in T₁, T₂ and T₃ did not differ significantly being at par. Results revealed that inclusion of Amla powder in the diet of broiler enhanced body weight of broilers.

The recorded feed intake at different weeks and Anova table were presented in Table 3 and 4. According to Table 3 it may be noted that mean feed intake of broilers, irrespective of treatments at one, two, three, four and five weeks of age was 120.3, 284.16, 428.94, 596.8 and 755 g, respectively. The difference in these were significant, which indicate a significant effect of age on the feed intake of broilers in all treatments. These results were as expected because under normal conditions an increase in feed intake with the increase in age is a normal phenomenon. Yonekma *et al.* (1980) observed that the addition of 0.5 Mg Amla powder per kg of diet in control group of white leg-horn chicks at two weeks had no significant effect on feed intake. These results are in agreement with the present investigation; nevertheless, significantly higher feed intake per broiler was recorded during fifth week than in fourth week. The intake of feed per broiler in fourth week was at par with third week, but broilers during both third and fourth week registered significantly higher feed intake than control group. However, the effect of treatments on feed intake of broilers due to treatments of Amla powder was significantly indicating a significant influence of treatments on feed intake of broilers.

Conclusion :

It may be concluded that there was a beneficial effect of Amla powder supplementation in the diet of broilers on body weight and feed intake of broilers. From economic point of view ration supplemented with vit c @ 100g/kg

feed was found the best compared to all the treatments.

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