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Short Communication

EFFECT OF ORAL FEEDING OF MULTI-ENZYMES ON GROWTH RESPONSE OF BROILER CHICKENS

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SUMMARY

A total of 225 unsexed day-old broiler chicks (Cobb) were randomly divided into five different groups (T0, T1, T2, T3 and T4) with three replicate of 15 birds in each. Multi-enzyme was administered through either feed (@ 50 g/100 kg of feed; group T1) or drinking water (@ 0.5 g/l, group T2; 1 g/l, group T3; and 1.5 g/l, group T4) to evaluate its effects on weekly weight gain till 6 weeks of age. The T0 (control) group was given diet without multi-enzymes. Weekly weight gain was significantly higher in all the treatment groups as compared to controls throughout the experiment (except in the 4th week). The birds receiving multi-enzymes through drinking water recorded the highest weekly weight gain as compared to T1 (through feed) and T0 (control). It is inferred that the supplementation of multi-enzymes through drinking water @ 0.5 g/lit had a positive and growth boosting effect in broiler chicken.

Key words: Multi-enzymes, broiler, growth, body weight, feed, water

Besides non-starch polysaccharides, the conventional and non-conventional feed ingredients used in poultry rations, have certain indigestible residues such as galactosides, phytates and some anti-nutritional factors such as pectins, tannins, trypsin inhibitor etc. These residues are indigestible due to lack of endogenous enzymes and trap valuable nutrients. A customized blend of enzymes can unlock these trapped nutrients and improves the feed nutritive value and feed efficiency. Many researchers (Steenfeldt *et al*., 1998; Kocher *et al*., 2000; Malathi and Devegowda, 2001) have reported an overall improvement in performance of poultry by supplementing the diet with multi-enzyme preparations. A simple method that has received less attention is the administration of multi-enzymes through drinking water and there is a little scientific literature available regarding comparative studies of multi-enzymes through drinking water and feed on performance of broilers. Hence the present study was undertaken with the objective of estimating the growth response of broilers fed with multi-enzymes.

Day-old broiler chicks (n=225; Cobb) were reared under deep litter system with standard management conditions. The multi-enzyme preparation used was a blend of alpha-amylase, pectinase, acid protease, cellulase, lipase, xylanase, hemicellulase, phytase, alpha-galactosidase and invertase in various proportions. The diet prepared was iso-caloric and iso-proteinacious for broiler, starter and finisher rations as per Bureau of Indian Standards (BIS, 2007). The chicks were randomly allocated to five treatment groups with three replicates of 15 birds each. These groups were given diets as: diet without multi-enzyme T_0 (control group); diet with multi-enzymes @ 50 g/100 kg of feed (group T_1), diet with multi-enzymes in drinking water @ 0.5 g/lit/day (group T_2), diet with multi-enzymes in drinking water @ 1 g/lit (group T_3) and diet with multi-enzymes in drinking water @ 1.5 g/lit (group T_4). Chicks were offered *ad*

Table 1
Weekly mean body weight gain (g) of broilers under different treatment groups

Week	Group						
	T_0	T_1	T_2	T_3	T_4	SE ±	CD
1st	80.00^{a}	83.00^{a}	86.00^{ab}	80.00^{a}	90.67^{b}	2.11	6.86
2nd	190.33^{a}	186.67^{a}	206.33^{b}	214.00^{bc}	219.33^{c}	2.80	9.13
3rd	220.22^{a}	239.67^{b}	241.00^{b}	260.00^{c}	260.00^{c}	4.42	14.39
4th	267.45^{a}	319.24^{b}	316.11^{b}	352.56^{d}	338.32^{c}	12.44	28.68
5th	415.00^{d}	408.67^{cd}	400.00^{bc}	374.00^{a}	392.00^{b}	3.72	12.12
6th	342.00^{a}	367.00^{b}	448.33^{c}	449.33^{c}	439.00^{c}	4.93	14.05

Means with at least one common alphabet as superscript in rows do not differ significantly from each other. T_0=Control; T_1=multi-enzymes @50 g/100 kg feed; T_2=multi-enzymes @0.5 g/lit. of water; T_3=multi-enzymes @1.0 g/lit of water

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Table 2
Mean squares for weekly body weight gain of broilers at different age

Source	Df	MSS					
		1st week	2nd week	3rd week	4th week	5th week	6th week
Treatment	4	61.07 (4.58**)	619.17 (26.27**)	836.77 (14.27**)	764.07 (18.38**)	7745.1 (106.32**)	3123.92 (13.46**)
Replicate	2	1.245	0.45	10.15	36.32	296.39	296.76
Error	8	13.31	23.57	58.62	41.57	72.85	232.13

**P<0.01. The analysis of variance showed highly significant (P<0.01) differences among all the treatment groups. Figure in parenthesis indicates F value.

libitum clean drinking water throughout the day. Weighed amount of ration was offered every day in the morning and evening to all the treatment groups. The differences among treatments within experiment were determined by Complete Randomized Design (CRD) as suggested by Snedecor and Cochran (1994).

The multi-enzyme preparation that improves the nutritive value of ration may complement the genetic exploitation of the poultry birds. It is also important for the improvement in carcass quality, production efficiency and processing capacity of poultry products. In the present study, significantly higher weekly weight gain was observed in all the treatment groups (T_1-T_4) as compared to T_0 at different intervals (Tables 1 and 2). The birds receiving multi-enzymes through drinking water recorded the highest weekly weight gain as compared to group T_1. The increase in body weight gain may be due to uniform availability of multi-enzymes resulting in improved nutrient digestibility. A significant increase in weight gain was also observed by Iji *et al*. (2003), Ahmed *et al*. (2004) and Olukosi *et al*. (2007) by multi-enzyme supplementation in broiler chickens.

The body weight and cumulative weight gain in the birds receiving multi-enzymes through drinking water was also dose dependent. Increasing levels of multi-enzymes through drinking water also increased the feed consumption. Increased body weights up to 6th week of age indicated that the multi-enzymes through drinking water might have resulted in better digestion and feed utilization. Incorporation of multi-enzymes through feed was also beneficial, though not upto the extent as observed by its addition through drinking water. Use of multi-enzymes at 0.5 g/lit of drinking water resulted into the most efficient feed conversion ratio as compared to other two levels of its incorporation through drinking water or through feed. Hence, it is inferred upon that supplementation of multi-enzymes through drinking water @ 0.5 g/lit showed a positive and growth boosting effect on raising of broiler chicken.

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