EFFECT OF MULTI - ENZYME ON PRODUCTION PERFORMANCE AND CARCASS TRAITS OF NANDANAM BROILER - 2 CHICKENS

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Received : 06.02.2013 Accepted : 05.11.2013

ABSTRACT

A study was conducted at Institute of Poultry Production and Management (IPPM), Madhavaram Milk colony, Chennai-51.Three hundred and sixty (360) day-old straight run Nandanam broiler - 2 chicks were individually weighed, wing banded and randomly assigned to three different dietary treatments with two replicates and reared on deep litter system for a period of 8 weeks. The results showed that supplementation of muti-enzyme at the rate of 500g per ton of feed (T2) in Nandanam broiler-2 ration were significantly higher (P<0.01) than control in weight gain of 2nd, 8th and 0-8 week of age. The feed consumption and feed conversion efficiency was significantly higher (P<0.01) in control compared to treatment. The livability was highly significant (P<0.01) in T3 than control. The carcass characteristics of live weight, heart, eviscerated, giblet and ready-to-cook weight did not show any significant difference in treatment group than control. The cut-up parts of breast yield were highly significant (P<0.01) in T2 than control. The drumstick yield was significantly higher (P<0.01) in control than treatments. The cut-up-parts of back, thigh, neck and wing did not show any significant difference in treatment than the control, but the value was better in enzyme treated group. It was concluded that the production performance was better in supplementation of multi – enzyme at the rate of 500g/ ton of feed and carcass traits was not significantly different between the treatments.

Key words: Multi - enzyme, weight gain, Feed consumption, Livability, ready – to – cook weight

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INTRODUCTION

Feedstuffs for diets have been estimated to contribute 70-80% of the total cost of rearing poultry. Factors that influence the composition and utilization of the diets will have substantial effect on the cost of poultry production. Addition of exogenous feed grade enzymes in diets to digest non-starch polysaccharides and phytate have been reported to improve the availability of nutrients from feed ingredients in broilers (Bharathidhasan, 1999). Consistent improvement in performance of broiler chicken owing to exogenous enzyme preparations has been reported (Friesen *et al.*, 1992). Improvements in the efficiency of utilization of poultry diets and nutrients of the order of about 10% have often been reported to be achieved as a result of supplementation with enzymes (Cowieson *et al.*, 2000). It is well documented that supplementation of diets with exogenous enzymes can reduce the adverse effects of some of these components reported (Bedford and Schulze, 1998). Only limited work was carried out in this broiler strain. Therefore, the study was conducted on effect of multi-enzyme in Nandanam broiler 2 Chicken.

MATERIALS AND METHODS

The study was conducted at Institute of Poultry Production and Management (IPPM), Madhavaram Milk colony, Chennai-51.Three hundred and sixty (360) day-old straight run Nandanam broiler 2 chicks were individually weighed and wing banded and randomly assigned to three different dietary treatments with two replicates and reared in deep litter system for a period of 8 weeks. Feed and water was offered *ad libitum* and standard vaccination scheduled was adopted. The broiler chicks were fed with three (T1-T3) experimental diets of chicks one was control (T1) and other two belonged to treatment groups (T2 and T3). T2 was compared to basal diet plus 500g multi-enzyme per ton of feed and T3 contained basal diet plus 1000gm multi-enzyme per ton of feed. Birds of different groups received their respective diets in the form of starter ration upto 4 weeks of age followed by finisher rations during 5 to 8 weeks. Individual body weights and group feed consumption were recorded at weekly intervals and feed conversion ratio (FCR) was calculated from the data of feed intake as a ratio of weight gain. Mortality was recorded on daily basis. At the end of experiment, three male and three females from each group were slaughtered and data related to carcass and cut-up parts were recorded. The data were subjected to statistical analysis as per Snedecor and Cochran (1989).

RESULTS AND DISCUSSION

The effects of graded levels of multi-enzyme on performance of experimental Nandanam broiler 2 are shown in the Table 1. The results showed significantly ($P<0.01$) higher body weight gain in T2 group followed by T3 and T1 groups in 2nd, and 8th week of age. During 4th week of age the body weight gain were not significantly different among the groups. Findings of this study are in close agreement with results reported by Vidyarthi *et al.,* (2010) which might be due to supplemention of 400 gm Alvyzyme per ton of broiler ration which increased growth rate when compared to control. Result of this experiment indicated that 500gm/ton of multi-enzyme supplement was a suitable dose to maize-soy

bean meal based diet for Nandanam broiler 2 growth. Ravindran *et al.,* (1995) also reported that the response in BW gain to addition of the graded levels of phytase (125, 250, 375, 500, 750 and 1000 FTU/kg) reached the plateau at 500 FTU g. But, in contrary Salehi and Rahimi (2009) reported that there was no significant difference between 0.05% Feedzyme II BG (amylase, protease, cellulose, B-glucanase and xylanase), 0.05% Grindazyme GP 5000 GmbH (B-glucanase, hemicellulase, pectinase, amylase, protease and xylanase) and 0.05% ZY285 (hemicellluloses, cellulase,arabinoxylanase, B- glucanase, xylanase and cellubiase) in average live weight among the treatment groups at 49 days of age. The total feed consumption and feed conversion efficiency during 0-8 weeks period was significantly (P<0.01) higher in T1 than T2 and T3. This findings are in close agreement with that of Salehi and Rahimi (2009). The livability was significantly (P<0.01) higher in T3 followed by T2 and T1. But this result was in contradiction to Vidyarthi *et al*., (2010) who reported that there was no mortality in the birds fed without enzyme supplementation, compared to Alvyzyme supplementation at the rate of 200g, 400g and 600g per ton of feed from 0-6 weeks of age. The per cent blood and inedible organ and head were significantly (P<0.01) higher in T3 followed by T2 and T1. Per cent liver and gizzard were significantly (P<0.01) higher in T1 followed by T2 and T3. The average live weight, per cent shank, heart, feather, eviscerated weight, giblet and ready to-cook weight did not show significant differences in the present study and the results were marginally higher in control than treatment and the results concurrent with the findings of Ramesh and Chandrasekaran, (2011). Among the cut-up-parts, per cent breast was significantly (P<0.01) higher in T2 than T1 and T3. Drumsticks were significantly higher (P<0.01) in T1 followed by T3 and T1, but there was no significant difference in other cut-up-parts like back, thigh, neck and wing. These values corroborated with observations of Kadam *et al*., (2007) who fed with two protein levels to broilers.

The present study was carried out, to understand the effect of multi-enzyme on production performance and carcass traits of Nandanam chicken-2. The study reveled improved body weight gain in second, and eighth week and livability was higher in enzyme treated groups. The carcass traits of eviscerated and ready to cook weight showed no improvement in enzyme treated group compared to control. The cut-up-parts of per cent breast yield was better in enzyme supplementation at the level of 500g per ton of feed. It was concluded that the production performance was better with the supplementation of multi – enzyme at the rate of 500g/ ton of feed and carcass traits of enzyme supplemented group observed no improvement.

Table1. Effect of multi - enzyme on growth performance and carcass traits of Nandanam B2 chicken (Mean ± S.E)

Production parameters	T1(control)	T2 (500g/ton of feed)	T3 (1000g/ton of feed)
Hatch weight^{NS}	34.49 ± 0.20	34.67 ± 0.17	34.31 ± 0.20
2nd Weight gain**	58.89 ± 2.26^{c}	88.13^{a} ± 2.89	86.61^{ab} ± 2.17
4th week weight gain^{NS}	133.12 ± 5.15	134.19 ± 6.04	136.46 ± 4.36
8th week weight gain**	271.41^{a} ± 17.97	328.03^{a} ± 21.76	244.34^{b} ± 14.48
0-8 week weight gain**	846.99^{a} ± 17.48	900.54^{a} ± 20.55	794.07^{b} ± 14.70
FCE**	2.90 ^{a} ± 0.07	3.05^{b} ± 0.08	3.49 ^{c} ± 0.07
Livability(%)**	86.29^{b} ± 1.30	84.72^{c} ± 1.42	92.87^{a} ± 0.68
Carcass studies			
Live weight(g) ^{NS}	949.60 ± 36.04	903.80 ± 59.33	879.80 ± 69.56
Blood(%)**	3.39^{b} ± 0.30	4.86^{ab} ± 0.39	5.00^{a} ± 0.34
Head(%)*	3.50^{ab} ± 0.19	3.11^{b} ± 0.23	4.07^{a} ± 0.26
Shank(%)^{NS}	4.73 ± 0.34	4.26 ± 0.24	4.96 ± 0.32
Liver(%)**	5.82^{a} ± 0.38	2.70^{b} ± 0.17	2.33^{c} ± 0.10
Heart(%)^{NS}	0.83 ± 0.14	0.60 ± 0.07	0.67 ± 0.06
Gizzard(%)**	5.74^{a} ± 0.28	2.88^{c} ± 0.17	3.13^{b} ± 0.33
Inedible organ (%)**	10.76^{b} ± 0.60	11.35^{ab} ± 0.59	14.06^{a} ± 0.88
Feather(%)^{NS}	13.38 ± 0.91	12.42 ± 0.41	12.75 ± 0.75
Eviscerated wt (%)^{NS}	50.30 ± 1.92	48.07 ± 1.53	49.47 ± 2.6
Giblet wt(%)^{NS}	6.18 ± 0.24	6.17 ± 0.29	6.14 ± 0.37
R-T-C wt (%)^{NS}	56.48 ± 1.99	54.25 ± 1.43	55.61± 2.77
CUT-UP-PARTS			
Breast (%)**	25.95^{b} ± 0.38	28.35^{a} ± 0.69	25.46^{c}± 0.66
Back(%)^{NS}	20.75 ± 0.53	22.08 ± 0.83	21.26 ± 0.54
Thigh (%)^{NS}	16.30 ± 0.36	15.68 ± 0.55	16.13 ± 0.61
Drumstick (%)**	20.69^{a} ± 0.55	16.70^{b} ± 0.49	18.49^{ab} ± 0.65
Neck (%)^{NS}	5.92 ± 0.33	6.67 ± 0.58	7.25 ± 0.35
Wing (%)^{NS}	10.39 ± 0.17	10.52 ± 0.79	11.40 ± 0.48

*Significant (P<0.05) ** Highly significant (P<0.01) Ns-Not significant

Values in the same row bearing different superscripts differ significantly.

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