The Indian Journal of Veterinary Sciences & Biotechnology *(2016) Volume 12, Issue 2, 18-21*
ISSN (Print) : 2394-0247 : ISSN (Print and online) : 2395-1176, abbreviated as IJVSBT
http://dx.doi.org/10.21887/ijvsbt.v12i2.3730

Submitted : 05-07-2016 ***Accepted : 21-08-2016*** ***Published : 15-10-2016***

Effect of Supplementation of Multi Enzymes on Production Performance and Egg Quality Traits in White Leghorn Layers

C. Pandian, A. Sundaresan and A.V. Omprakash

Poultry Research Station

Tamil Nadu Veterinary and Animal Sciences University

Madavaram Milk Colony, Chennai-600 051, India.

Corresponding author: chinnaduraipandian75@gmail.com

Abstract

The present study was conducted to assess the effect of supplementation of Multi-enzymes with lysophospholipids on production performance of pure line White Leghorn layers. Body weights before and after the experiment did not differ significantly across the experimental diets. Irrespective of the dietary treatments, the birds gained 3.83 per cent of live weight relative to its initial body weight. Mean per cent Hen housed egg production was significantly ($P<0.05$) higher in diet supplemented with 0.10 MEC-L than other groups. Mean egg weight and average daily feed consumption during 25 to 35 weeks of age indicated no significant effect of enzyme supplementation. Average daily feed consumption per bird in control, 0.05 % and 0.1% multi-enzyme supplemented groups was 108.13, 105.66 and 107.67 g respectively and birds offered control diet recorded numerically more feed intake than enzyme supplemented groups. Comparatively low feed per egg was observed in 0.10 per cent group followed by 0.05 per cent group which offers economic benefits than control diets. However, the egg quality traits between different dietary enzyme supplementation groups showed no significant difference.

Key Words : Multi-enzymes Complex, Supplementation, Production Performance and egg quality traits, White Leghorn.

Introduction

The primary ingredients of poultry diets are of plant origin especially seeds. The Non-Starch Polysaccharides (NSP) in plants *viz.* cellulose, hemicelluloses, pectins, glucans and arabinoxylans affect nutritive values of feed ingredients in many ways (Souffrant, 2001) as the NSP compounds can not be digested by chicken due to lack of NSP hydrolyzing enzymes. Dietary NSP inhibits digestion of starch, fat and protein (Choct, 2001). Review of literature reveals that the combination of Lysophospholipids along with exogenous enzymes complex have positive effects on nutrients digestibility and absorption which is reflected on feed efficiency and production performance (Santos *et al.,* 2004). Hence the present study was carried out to investigate the effect of combination of multi-enzymes with lysophospholipids on production performance in White Leghorn Layers.

Materials and Methods

An experiment for a period of 10 weeks duration was conducted to study the effects of supplementation of multi-enzyme in combination with lysophospholipids (MEC-L) on production performance of pure line White Leghorn (Forsgate strain) layers at Poultry Research Station, TANUVAS, Chennai in the year 2014. A total of 180 WLH pullets at 25 weeks of age were weighed individually, randomly divided into three groups (T1, T2 and T3) with three replicates of 20 birds each. *Isonitrogenous* and *isocaloric* experimental layer diets were formulated as per recommended nutrients level and supplemented with multi-enzyme at the rate of 0, 0.05 and 0.1 per cent respectively (Control diet- 0, T1- 0.05 and T2-0.10 per cent). Diets were offered *ad libitum for* 10 weeks and the birds were maintained in cage system of rearing with standard managemental condition. The parameters such as Hen Housed Egg Production (HHEP), feed intake, egg quality traits were recorded and feed intake per egg, feed cost per egg and net receipt over total feed cost were calculated. The data were analyzed as per standard statistical procedure described by Snedecor and Cochran (2004).

Results and Discussion

The effect of different levels of multi-enzymes with lysophospholipids supplementation on production performance and egg quality traits of WLH is presented in Table.

Table. Effect of multi-enzymes with lysophospholipids supplementation on Production Performance and egg quality traits of Pure line WLH layers (Mean±SE)

1	Body weight at 25 weeks of age (kg)^{NS}	1.182 ± 0.01	1.180 ± 0.02	1.061 ± 0.01
2	Hen Housed Egg Production (%)*	61.47^{b}± 1.52	62.97^{b}±1.73	67.32^{a}±1.62
3	Egg Weight (g)^{NS}	46.32±0.76	46.23±0.63	48.60±0.57
4	Average Feed Consumption/bird/day (g) (25-35 weeks)^{NS}	108.13±7.22	105.66±7.57	107.67±7.20
5	Feed/Egg(g)^{NS}	193.65±17.57	183.23±15.92	179.65±19.52
6	Cost of feed /Egg (Rs)**	3.53^{a}±0.02	3.35^{b}±0.06	3.30^{b}±0.02
7	Net Receipt over Total Feed Cost (%) **	12.9^{c}±0.10	18.89^{b}±0.28	20.70^{a}±0.14
8	Body weight at 35 weeks of age(kg)^{NS}	1.226± 0.02	1.223±0.01	1.103±0.01
1	Yolk percentage^{NS}	33.14±0.43	31.94±0.49	33.99±1.56
2	Albumen percentage ^{NS}	57.19±0.23	59.78±0.25	61.24±1.44
3	Yolkindex^{NS}	0.40±0.002	0.41±0.003	0.42±0.004
4	Yolk colour^{NS}	8.0±0.12	8.35±0.22	8.05±0.19
5	Albumen index^{NS}	0.081±0.005	0.13±0.005	0.12±0.007

Means bearing different superscript in the same row differs significantly

** (P<0.01), * (P<0.05), NS- Not significant

There was no significant difference in body weight among the treatment groups. Irrespective of the dietary treatments, the birds gained 3.83 per cent of live weight relative to their initial body weight. Mean per cent Hen housed egg production was significantly ($P<0.05$) higher in diet supplemented with multi-enzyme at 0.10 per cent (67.32± 1.62 %) than other two groups. This was in line with the reports of increased egg production in commercial layers due to dietary multi enzyme supplementation (Scheideler et *al.,* 2005 and Malekian et *al.,* 2013). The improved performance of layers with enzyme supplementation might be due to increased in ileal digestibility and released bound or entrapped dietary nutrients (Rama Rao *et al.,* 2009). No significant effect of multi-enzyme supplementation on mean egg weight and average daily feed consumption was observed. Average daily feed consumption per bird in control, 0.05 % and 0.1% multi-enzyme supplemented groups were 108.13, 105.66 and 107.67 g respectively and birds offered control diet recorded numerically more feed intake than multi-enzyme supplemented groups. Similar trend was observed by Rama Rao et *al. (2009) in* commercial layers. Comparatively low feed per egg (179 g) was observed in 0.10 per cent group followed by 0.05 per cent group (183 g) which offers economic benefits than control diets.

The cost of feed per egg was significantly low (Rs. 3.30) in diet with 0.10 per cent followed by 0.05 per cent (Rs.3.35) enzyme supplemented group. A net receipt over total feed cost was better in enzyme supplemented groups (18.89 to 20.70 %) than control group (12.9 %).These findings are in agreement with the reports of Cook *et al. (2000);* Gonzales *et al.*(2001) and Saleh et *al.(*2006). The egg quality traits namely, egg weight, yolk percentage, albumin percentage, Yolk index and Albumen index showed no significant difference among different enzyme supplemented groups. However, numerically better egg quality performances were observed in 0.05 % and 0.1% enzyme supplemented group than control. The study indicated that the supplementation of mult-enzyme with lysophospholipids to WLH layer diet at 25-35 weeks of age is beneficial in terms of higher egg production, reduced feed intake there by showing better relative cost economics in feeding of commercial layers.

Conflict of Interest: All authors declare no conflict of interest.

References :

Bedford, M.R (1996). Interaction between Ingested feed and the digestive system in Poultry.J.Appl.Poult.Res.5:86-95.

Choct, M. (2001). Enzyme supplementation of poultry diets based on various cereals.pp.145-160, In: Enzymes in farm animal nutrition.Ed:M.R.Bedford and G.G.Partridge, CABI Publishing, UK.

Cook M.E., Drake, B.M. and Ernest Pierson, E. (2000).Effects of Avizyme 1500 on laying hen performance.Poult.Sci.79 (7): Abstract 126

Gonzalez, N.J., Cornejo, S., Jimenez, F. and Lorenzoni, G. (2001).Effect of multi-enzyme systems with increasing levels of protease activity on broiler performance. Poult.Sci.79 (7): Abstract 151

Kocher, A., Choct, M., Ross, G., Broz, J. and Chung, T.K. (2003). Effects of Enzyme Combinations on Apparent Metabolizable Energy of Corn–Soybean Meal-Based Diets in Broilers. Appl.Poult.Res.12:275-283.

Malekian, Gh.Moghaddam, Z. and Khajali, F. (2013).Effect of Using Enzyme Complex on Productivity and Hatchability of Broiler Breeders Fed a Corn-Soybean Meal Diet. Poultry Science Journal, (1):36-45.

Rama Rao, S.V., Raju, M.V.L.N., Panda, A.K. and Shyam Sunder, G. (2009). Proceeding of Animal Nutrition Association world Conference, 14-17 Feb 2009, New Delhi,

Saleh, S.Y., Attia, K.A., Abd El-Hamid, S.S. and Nassar, M.M. (2006). A comparative study on the effect of multi-enzyme feed additive “Kemzyme” on some fertility parameters of turkey toms and

cockerls. Avian and Poult.Bio.Reviews 17 (2):1470-1478

Santos, A.A., Freket, P.R., Grimes, J.L. and Edens, F.W. (2004). Dietary supplementation of endoxylanases and phospholipase for turkeys fed wheat based rations. International Journal of Poultry Sci., 3(1):20-32.

Scheideler, S.E., Beck, M.M., Abudabos, A. and Wyatt, C.L. (2005). Multiple-enzyme (Avizyme) supplementation of corn-soy based layer diets. J.Appl.Poult.Res.14:77-86

Snedecor, G.W. and Cochran, W.G. (2004) Statistical Methods.9th ed. Oxford and IBH publishing Co., Calcutta.

Souffrant, W.B (2001). Effect of dietary fibre on ileal digestibility and endogenous nitrogen losses in the pig.Anim.Feed Sci.Technol.90:93-102.

❑

SVSBT-ISSAR(GUJ)-ASCAD National Seminar-2016

INVITATION

With great pleasure, we announce that the Society for Veterinary Sciences and Biotechnology (SVSBT) is going to organize its IV ***Annual Convention and National Seminar on "Biotechnological Approaches in Management of Health and Reproductive Disorders in Livestock for Sustainable Production"*** during ***16-17 December 2016 at College of Veterinary Science & AH, Anand Agricultural University, Anand-388 001, Gujarat*** in collaboration with the Indian Society for Study of Animal Reproduction (ISSAR), Gujarat Chapter and the Department of Animal Husbandry, Govt. of Gujarat, Gandhinagar under the aegis of Assistance to State for Control of Animal Diseases (ASCAD). The abstracts of research papers and lead papers in the theme areas are invited by 30th November 2016 by the Organizing Committee through e-mail to svsbtascadseminar2016@gmail.**com**; or ajdhami@aau.in for inclusion in the Souvenir/Compendium to be released on the occasion. The themes of the seminar are:

- Augmenting bovine reproduction through ARTs Or biotechnological tools
- Management of peripartum disorders (including obstetrical complications)
- Advanced diagnostic tools for general & reproductive health
- Challenges in breeding services inputs with reference to field fertility
- Andrology and frozen semen technology
- Infertility in domestic & wild animals.

The Awards for Best paper published in the Indian Journal of Veterinary Sciences & Biotechnology, 2015-16, Volume 11(1-4) by the life member of SVSBT, as well as the Best Paper Presentation, Overall and by the Young Scientist below 35 yrs of age, in each technical session including poster sessions will be honoured to the deserving scientist.

For Further details of Registration, Stay, Advertisement

Please Contact

Dr. A.J. Dhami

Organizing Secretary cum Professor & Head, Department of Gynaecology & Obstetrics

College of Veterinary Science & Animal Husbandry, AAU, Anand-388 001, Gujarat, India

E-mail: svsbtascadseminar2016@gmail.com; ajdhami@aau.in

Cell No.: +91 9898262498, Tel: (02692) 261871, Fax: (02692) 261486