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EFFECT OF SUPPLEMENTATION OF HERBAL LIVER TONIC-XLIVPRO ON GROWTH AND PERFORMANCE IN BROILERS

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ABASTRACT

Efficient liver functioning ensures effective metabolism, circulation, detoxification, excretion, defense and haemopoiesis. Objective of the experimental trial was to study the effect of polyherbal liver tonic Xlivpro premix (*M/S Ayurvet Limited, India*) on growth and performance in broilers**.** Day old chicks (n=60) were divided into 2 identical groups (T_0 and T_1) randomly. Basal diets (starter and finisher) were given to broiler chicks as per standard NRC requirements as well as artificial lighting was provided for 12 hrs daily. Group T_0, control group provided with standard basal diet without any liver tonic premix and in group T_1 basal diet supplemented with herbal liver tonic Xlivpro premix (250 g/tonne of feed from 0-35 days). Statistical analysis of results showed a significant (P>0.05) increase in live weight (g) and live weight gain (g) in herbal liver tonic Xlivpro premix supplemented T_1 group (1885.66 and 1842.17) in comparison to control T_0 group (1814.01 and 1771.39). At the end of experiment herbal liver tonic Xlivpro premix supplemented T_1 group showed improved FCR in comparison of control untreated group T_0. Dressing percentage was significantly improved in herbal liver tonic Xlivpro premix supplemented group T_1 in comparison to untreated group T_0. Plasma concentration of total protein (g/dl) and enzymes (AST/ALT) (U/L) was found to be non-significantly (P>0.05) different between the both groups, though numerically high in Xlivpro premix supplemented group. The trial investigation revealed better results in herbal liver tonic Xlivpro premix supplemented group in comparison to the untreated group. The product was found to be safe for usage.

KEYWORDS: Xlivpro premix, feed conversion ratio, live weight gain, Carcass weight.

INTRODUCTION

The health and productivity of poultry largely depends on optimum feed utilization, improved body weight, absence of disease, environmental factors and genetics [1]. In poultry industry improving feed utilization has become a core issue. In this liver plays a key role as being the centre of a number of digestive, metabolic and productive activities is at risk to microbial and chemical toxins which affect its functions, thereby resulting in poor health and production [2]. The production of low quality feed has created variety of problems for the broiler industry resulting in poor performance and lower returns [3]. In many animal production systems, approximately 2/3rd of improvements in livestock productivity can be attributed to improved nutrition. In economic terms, feed cost accounts for about 70% of the total cost of livestock production [4]. It is estimated that up to a five-fold increase in tropical livestock productivity can be attained if there is optimal feed resource utilization. Rapid and maximum growth in a minimum period with efficient feed utilization is of utmost importance for the profitable broiler production. Hepatoprotection by conventional and synthetic drugs used in treatment of liver diseases are inadequate and sometimes can have serious side effects [5]. In the absence of reliable liver protecting drugs in modern medicine, there are number of medicinal preparations in Ayurveda recommended for the treatment of liver disorders [6]. These preparations have also been indicated to exert immunomodulatory action, which confer birds with greater general immunity from various diseases, disorders and tolerance against toxins leading to lower mortality, morbidity, adaptability and enhanced productivity. Inclusions of such herbal preparations in broilers ration have been shown to give beneficial effects in terms of growth and performance. Better performances were recorded in broilers by feeding herbal liver tonics [7, 8]. In view of the above facts, the present investigation was undertaken to study the efficacy of herbal liver tonic product Xlivpro (*supplied by M/S Ayurvet Ltd., Baddi)* on overall growth, performance, feed efficiency, and carcass traits in commercial broilers. Xlivpro consists of herbs namely *Andrographis paniculata* [9], *Azadirachta indica* [10], *Solanum nigrum* [11, 12] these herbs by virtue of their therapeutic action, for example, liver cell rejuvenating (hepatogenerative), hepato-stimulative, hepatoprotective, antihepatotoxic and positive anabolic effect can tone up the liver of poultry birds for optimum performance and productivity.

MATERIALS AND METHODS

The study was conducted in the Department of Animal Nutrition, College of Veterinary & Animal Sciences, R.K. Nagar, Tripura, India after due approval from the ethical committee for conducting the trial.

Experimental Design

Objective of the experimental trial was to study the effect of polyherbal liver tonic Xlivpro premix (*M/S Ayurvet Limited, India*) on growth and performance in broilers**.** Day old chicks (n=60) were divided into 2 identical groups (T_0 and T_1) randomly. Basal diets (starter and finisher) were given to broiler chicks as per standard NRC requirements as well as artificial lighting was provided for 12 hrs daily. Group T_0, control group provided with standard basal diet without any liver tonic premix and in group T_1 basal diet supplemented with Xlivpro premix (250 g/tonne of feed from 0-35 days). All the chicks will be vaccinated as per routine farm practices.

For each group of birds individual body weight was recorded at the time of grouping at 0 day. Following other parameters (Average Feed Intake/consumption, Feed conversion Ratio, Mortality, and Incidence of Fatty liver syndrome) were recorded at weekly intervals throughout the experimental period at 7, 14, 21, 28 and 35 days of age. Serum biochemical parameters were recorded after 3rd & 5th week of experiemental study on representative 4 birds / replicate.

Statistical Analysis

All the results were analyzed statistically by analysis of variance to determine the means and standard error as per the methods described by Snedecor and Cochran [13].

RESULT AND DISCUSSION

Live Weight and Live Weight Gain

Statistical analysis of results revealed that at 5th week of age, significantly (P>0.05) higher live weight (g) (LW) and live weight gain (g) LWG was (table 1 and table 2) observed in herbal liver tonic Xlivpro premix supplemented T_1 group (1885.66 and 1842.17) in comparison to control T_0 group (1814.01 and 1771.39). The results are in accordance with Babu *et al*, Narahari, Prajapati, Samarsinghe and Went and Natsir *et al*., [14, 15, 16, 17, 18] who reported significant improvements in body weight due to supplementation of other herbal feed additives.

Table-1: Weekly body weight (g) of broiler.

Weeks	T_0 group	T_1 group
1 wk	166.93	166.44
2 wk	453.34	455.50
3 wk	888.74	886.32
4 wk	1428.34^{ab}	1408.18^{ab}
5 wk	1814.01^{a}	1885.66^{b}

Mean within the rows bearing different superscript are significantly different (P<0.05)

Table-2: Body Weight Gain (G) of Broiler.

Weeks	T_0 group	T_1 group
1 wk	124.32	122.95
2 wk	410.72	412.01
3 wk	846.12	842.83
4 wk	1385.72^{ab}	1364.69^{ab}
5 wk	1771.39^{a}	1842.17^{b}

Mean within the rows bearing different superscript are significantly different (P<0.05)

Feed Conversion Ratio

At the end of experiment herbal liver tonic Xlivpro premix supplemented T_1 group (1.776) showed significantly (P>0.05) improved FCR (table 3) in comparison of control untreated group T_0 (1.856). A similar result was observed by **Ma *et al.*,** [19] who found that a diet supplemented with herbs (*Ligustrum lucidum* and *Schisandra chinensis*) significantly improved the FCR in laying hens.

Table-3: Feed Conversion Ratio of Broiler Chicken.

Weeks	T_0 group	T_1 group
1 wk	0.987	0.990
2 wk	1.260^{b}	1.192^{ab}
3 wk	1.445^{b}	1.421^{ab}
4 wk	1.595^{b}	1.564^{ab}
5 wk	1.856^{a}	1.776^{b}

Mean within the rows bearing different superscript are significantly different (P<0.05)

The results also matched with the findings of **Kumar *et al.*,** [20] who noted significant improvement in feed efficiency of the birds when the diet was supplemented with turmeric in broilers.

Carcass Characteristics

Dressing percentage (table 4) was significantly (P<0.05) improved in Xlivpro premix supplemented group T_1 (71.48) in comparison to untreated group T_0 (68.12). Percentage

proportion of carcass weight varies significantly (P<0.05) in Xlivpro supplemented group. This increase in dressing yield is in accordance with the findings of **Sharma *et al.* and Elagib *et al.*** [21, 22].

Table 4: Carcass Characteristics of Broiler Chicken.

Parameters	T_0 group	T_1 group
Dressing %	68.12	71.48
Giblet %	5.08^a	6.46^b
Neck %	6.24^a	7.54^a
Wing %	11.61^a	13.50^b
Back %	20.58^a	25.47^b
Breast %	30.36^a	37.92^b
Thigh %	16.09^a	21.89^b
Drumstick %	11.37^a	13.26^b

Mean within the rows bearing different superscript are significantly different (P<0.05)

Plasma Protein and Enzyme Concentration

Plasma concentrations of total protein (g/dl), AST- aspartate aminotransferase (IU/L) and ALT- alanine aminotransferase (IU/L) between both groups on day 21st and on day 35th varies non significantly (P>0.05) (table 5).

Table 5: Plasma Protein and Enzyme Concentration of Broiler Chicken.

Parameters	Total protein, g/dl		AST, IU/L		ALT, IU/L	
Age, day	21	35	21	35	21	35
T_0 group	3.50	3.95	120.63	146.19	18.00	16.50
T_1 group	3.48	4.18	127.88	150.31	18.25	17.50

The values of AST (IU/L) (127.88 on day 21st and 150.3 on day 35th) and ALT (IU/L) (18.25 on day 21st and 17.50 on day 35th) were non significantly higher (P<0.05) in Xlivpro supplemented group. Results were in accordance with the findings of **Akbarian *et al.*** [23] who collected data in broiler chickens, showed no significant differences in the activities of AST, ALT and LDH enzymes on supplementation of herbs.

CONCLUSION

On the basis of all the findings, it can be concluded that supplementation of liver tonic product Xlivpro is efficacious for improving growth, performance and carcass traits in broilers besides normalizing biochemical parameters. The product was found to be safe for usage and can be recommended as liver tonic and growth enhancer in poultry.

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REFERENCES

1. Odongo NE, Garcia M and Viljoen GJ. Sustainable improvement of animal production and health. FAO, Rome, 2010; 1-389.
2. Meyer SA and Kulkarni AP. Hepatotoxicity. In: Introduction to biochemical toxicology. 3rd Edn. New York: John Wiley and Sons, 2001; 487.
3. Pervez, Rafiullah and Abdul Sajid. Effect of feed additives on the performance of broilers. ARPN JABS, 2011; 6 (9): 66-71.
4. Yami A and Markel RC. Ethiopia Sheep and Goat Productivity Improvement Program. 2008; 1-345.
5. Guntupalli M, Chandana V, Palpu P and Shirwaikar A. Hepatoprotective effects of Rubiadin, a major constituent of Rubia cordifolia Linn. L. *Ethnopharmacol*, 2006; 103: 484-490.
6. Chatterjee TK. Medicinal plants with hepatoprotective properties. In: Herbal options. 3rd Edn. Calcutta Books and Allied (P) Ltd. 2000; 135.
7. Ramappa, B.S., S. K. Goni and Devegowda. Effect of feeding Liv-52 on the growth and feed consumption of broiler chicken. Indan Vet J, 1975; 25:115-120.
8. Tollba AAH, Shabaan SAM and Abdel-Mageed MAA. Effects of using aromatic herbal extract and blended with organic acids on productive and physiological performance of poultry and growth during cold winter stress. Egypt Poult Sci, 2010; 30(I): 229-248.
9. Handa SS, Sharma A. Hepatoprotective activity of andrographolide from Andrographis paniculata against carbontetrachloride. Indian J Med Res. 1990; 92:276-83.
10. Chattopadhyay RR, Sarkar SK, Ganguly S, Banerjee RN, Basu TK, Mukherjee A. Hepatoprotective activity of Azadirachta indica leaves on paracetamol induced hepatic damage in rats. Indian J Exp Biol. 1992; 30(8):738-40.
11. Raju K, Anbuganapathi G, Gokulakrishnan V, Rajkapoor B, Jayakar B, Manian S. Effect of dried fruits of Solanum nigrum LINN against CCl4-induced hepatic damage in rats. Biol Pharm Bull. 2003; 26(11):1618-9.

12. Subash KR, Ramesh KS, Charian, Binoy Vargheese, Britto Francis, Rao N, Jagan Vijaykumar S. Study of Hepatoprotective Activity of Solanum nigrum and Cichorium intybus. Int J Pharmacol, 2011; 7(4): 504.
13. Snedecor GW and Cochran WG. Indian 6th reprint Edn. Oxford and IBH Publishing Co. Calcutta, 1976; 124-126.
14. Babu M, Gajendran K, Sheriff FR, Srinivasan G. Crown Grow fit supplementation in broilers improved their performance. Indian Poult Rev, 1992; 23: 27-28.
15. Narahari D. Performance promoting ability of ' Activity Forte ' in broilers. Poul Adv, 1992; 25(7): 37-38.
16. Prajapati. Effect of dietary supplementation of Livfit vet premix on performance of broilers. Indian J. Poult. Sci., 1997; 32(1): 86-88.
17. Samarasinghe K and Went C. Effect of herbs on performance of broilers.Iin Proc. 11th Eur.Poult. Conf., Bremen, Germany,2002; 116
18. Natsir MH, Hartulik O, Sjofjan and Widodo E. Effect of Either Powder or Encapsulated form of Garlic and Phyllanthus niruri L. Mixture on Broiler Performances, Intestinal Characteristics and Intestinal Microflora. Int J Poult Sci, 2013; 12 (11): 676-680.
19. Ma D, Shan A, Chen et al. "Effect of Ligustrum lucidum andSchisandra chinensis on the egg production, antioxidant status and immunity of laying hens during heat stress," Arch Anim Nutr, 2005; 59(6): 439–447.
20. Kumar M, Choudhary RS and Vaishnav JK. Effect of supplemental prebiotic, probiotic and Turmeric in diet on the performance of chicks during summer. Int J Poult Sci, 2005; 40: 137-141.
21. Sharma RK, Maini S and Ravikanth K**.** Beneficial Effects of Superliv DS and Xlivpro on growth promotion and quality in Broilers**,** Veterinary World, 2008; 1(12): 363-365.
22. Elagib HAA, El-Amin WIA, Elamin KM and Malik HEE. Effect of Dietary Garlic (Allium sativum) Supplementation as Feed Additive on Broiler Performance and Blood Profile. J Anim Sci Adv. 2013; 3(2): 58-64.
23. Akbarian A, Golian A, Kermanshahi H, Gilani A and Moradi S. Influence of turmeric rhizome and black pepper on blood constituents and performance of broiler chickens. Afr J Biotechnol, 2012; 11(34): 8606-8611.