



RESEARCH ARTICLE.....

Effect of different herbals feed additives on the feed intake and feed conversion efficiency of Giriraja poultry birds

ABDUL HAFIZ PAKRAWAN, R. R. SHELKE, S. D. CHAVAN, P. A. KAHATE AND R. D. WALKE

ABSTRACT..... The present investigation entitled “Effect of different herbals feed additives on the feed intake and feed conversion efficiency of Giriraja poultry birds” was carried out to assess the effect of feeding Coriander and *Tulsi* seed powder on feed consumption and feed conversion ratio (FCR) or efficacy, during 2016-17 at Department of Animal Husbandry and Dairy Science, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola. 125 chicks of day-old straight run commercial Giriraja breed were procured from Govt. hatchery. They were randomly and equally distributed in to five dietary treatments consisted of on basal control (T_1) (untreated group), supplemented with one per cent coriander seed powder (T_2) 2 per cent coriander seed powder (T_3), 1 per cent *Tulsi* seed powder (T_4) and 2 per cent *Tulsi* seed powder (T_5). The significant difference in weekly feed consumption was found from forth week onward. The trend of significantly feed consumption was recorded in T_1 (680.42), T_2 (677.66), T_3 (675.33), T_4 (679.40) and T_5 (673.83) groups during forth to seventh week which the feed intake of all chicks receiving coriander and *Tulsi* seed powder reared lower than control and this was a linear decrease in level might be due to of feed additives addition. The cumulative feed consumption at seventh weeks of age were recorded as 2678.32, 2662.13, 2648.78, 2673.28 and 2648.33 g for T_1 , T_2 , T_3 , T_4 and T_5 treatments groups, respectively. supplementation of 2 per cent *Tulsi* seed powder was found more beneficial to live body weight gain, feed consumption and feed conversion efficiency of Giriraja poultry birds.

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INTRODUCTION.....

Feed supplement and feed additives has served the purpose of best production efficiencies over the years. Potential of birds is fully utilized by such feed formulation and feeding practices. At present numbers of feed

additives are used to feed broiler birds for the purpose of increase in body weight gain and improve feed efficiency (FCR). However, availability of quality feed at the reasonable cost is key to successful poultry operation (Basak *et al.*, 2002). In view of this to

overcome problems of quality feed it is prime important to add some feed additives as a growth promoters. However some additives like hormones, probiotics, antibiotics and others with the aim to increase the feed efficiency, have residual effects. They leave their residue in meat and egg. Among all these, herbal feed additives are better for feeding of poultry to improve weight gain, feed efficiency and feed intake. These herbal feed additives have no side effects on the health of birds. The dietary use of herbal growth promoter increases the performance of poultry by increasing live weight gain and FCR (Prasad and Sen, 1993 and Samarth *et al.*, 2002). Indian rural poultry farming by developing and releasing a synthetic colored dual-purpose strain namely “Giriraja”. Symbolically expressed, Giriraja stands for king of the jungle fowl. It is a strain bred to resemble local fowls. Sturdy and resistant, it can easily acclimatize itself to any region and weather. Giriraja yields high quality and quantity of meat and eggs which can survive like any native stock, except for the routine rank. In other word, Giriraja is a miracle fowl.

Coriander has used as a medicine for thousands of years and is still used in folk medicine. As a medicinal plant, coriander has been used to manage disease, used as an antifungal, antioxidant, hypolipidemic, antimicrobial, hypocholesterolemic and anticonvulsant substance. In addition, it has appetizing and stimulatory effects in the digestion process. (Chithra and Leelamma, 1997). *Tulsi* is identified by (Rama and Krishna *Tulsi* varieties) or more recently *Ocimum tenuiflorum* and *Ocimum gratissimum* (Vana *Tulsi* variety) belonging to the Lamiaceae/Labiata mint family, these and other closely related species and varieties (e.g., *Ocimum canum*) are cousins of the familiar sweet basils cooking herb *Ocimum basilicum*. In parts of India, all of the basils are honoured as *Tulsi* (Padalia and Verma, 2011). The growth promoting feed additives create optimum condition for normal growth by acting in various ways. The successful use growth promoting feed additives will fetch more profit. In view of this, the present investigation entitled “Effect of different herbals feed additives on the growth performance of Giriraja poultry birds” was planned and undertaken with the following objectives, to determine the feed consumption and FCR of these herbal in Giriraja poultry birds.

RESEARCH METHODS.....

The present investigation entitled “Effect of different

herbals feed additives on the feed intake and feed conversion efficiency of Giriraja poultry birds” was carried out to assess the effect of feeding coriander and *Tulsi* seed powder on feed consumption and feed conversion ratio (FCR) or efficacy, during 2016-17 at Department of Animal Husbandry and Dairy Science, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola. 125 chicks of day-old straight run commercial Giriraja breed were procured from Govt. hatchery. They were randomly and equally distributed in to five dietary treatments consisted of on basal control as standard ration. (T₁), standard ration + 1% coriander seed powder (T₂), standard ration +2% coriander seed powder (T₃), standard ration +1% *Tulsi* seed powder (T₄) and standard ration +2% *Tulsi* seed powder(T₅). The diets were fed *ad-libitum* to experimental birds by adding coriander and *Tulsi* powder as given above. The vaccination programme of the experimental birds was scheduled weekly as described by Prasad (2013).

Before arrival of Giriraja chicks the pens, waterer (Drinker), feeders, brooders floor were cleaned, washed, disinfected and fumigated. All the experimental chicks were reared on deep litter system of rearing with use of saw dust as a litter material in a well-ventilated house with identical management and environmental conditions. The experimental chicks were weighted individually at weekly interval upto the seven weeks using electronic balance. Weekly feed consumption was calculated by the amount of feed offered at the beginning of week, minus left over at the end of week and cumulative feed consumption was worked out for all the treatment groups. Weekly feed efficiency was calculated by using following formula :

$$FE = \frac{\text{Feed consumption (g) during the week}}{\text{Gain in body weight (g) during the week}}$$

The data denoted on feed consumption and feed efficiency was analyzed by Completely Randomized Design as described by Amble (1975).

RESEARCH FINDINGS AND ANALYSIS.....

In present study with an objective to study the effect of supplementation of these herbals feed additives was recorded during the period of experiment, data obtained was analyzed statistically, presented and discussed in the light of finding of earlier researches.

Effect of different herbals feed additives on average weekly overall live body weights of Giriraja poultry birds:

The data obtained in respect to average weekly live body weights of Giriraja poultry birds from day old to seven weeks age in all treatment groups was statistically analyzed tabulated and presented in Table 1.

It observed from the present study that the average live body weight of Giriraja poultry birds at day old stage were 32.30, 31.70, 32.00, 31.02, and 32.45 for the treatments T₁, T₂, T₃, T₄ and T₅, respectively. The initial body weights of Giriraja poultry birds were statistically non-significant in all dietary treatments indicating that the treatments groups were homogenous in nature. The corresponding average live body weights at the end of seven weeks of age were 1095.72, 1189.48, 1238.56, 1213.18 and 1261.6 g T₁, T₂, T₃, T₄ and T₅ treatment, respectively. The significant difference in weekly body weight was found from second week and onward. The trend of significantly better growth was recorded in T₅ (1261.6) and followed by T₃ (1238.56) groups during second to seventh week. Finding observed by various research workers are also reported Saeid Al-Nasry and

Saeid (2010) reported that supplemented at coriander seed diet exhibited the highest body weight gain and decreased feed intake.

Farah and Al-Jaff (2011) investigated the potential effect of coriander seed on physiological traits. Birds were fed experimental diets containing 0 (T₁), 1 (T₂), 2 (T₃) and 3 per cent (T₄) coriander seed. Results showed that 2 per cent and 3 per cent group showed better feed consumption and feed conversion ratio than control. It was observed that inclusion of coriander seed at level of two per cent have a positive effect on body weight performance of broilers. Similar results were also reported by Sunbul *et al.* (2010); Hermogenes *et al.* (2011); Rashid *et al.* (2014); Naeemasa *et al.* (2015) and Ahmad *et al.* (2016).

Effect of different herbals feed additives on average weekly cumulative feed consumption of Giriraja poultry birds :

The data recorded on average cumulative feed consumption per bird from first to seventh weeks in different treatment groups was analyzed, tabulated and presented in Table 2.

Table 1 : Average weekly overall live body weights of Giriraja birds (g/bird)

Treat.	Initial weight	1 st week	2 nd week	3 rd week	4 th week	5 th week	6 th week	7 th week
T ₁	32.30	94.72	195.89	340.84	510.56	690.38	890.36	1095.72
T ₂	31.70	96.22	196.98	349.76	520.57	749.46	960.52	1189.48
T ₃	32.00	97.98	199.46	367.66	544.40	775.28	999.52	1238.56
T ₄	31.02	99.62	200.86	370.06	541.40	755.28	986.62	1213.18
T ₅	32.45	101.52	204.06	381.62	571.12	781.96	1025.72	1261.6
'F' test	NS				S			
S.E.±	1.233	1.723	1.598	7.590	10.361	19.658	29.119	22.466
C.D.	3.640	5.085	4.714	22.392	30.566	57.992	85.903	66.275

NS= Non-significant

S= Significant

Table 2 : Average cumulative feed consumption of Giriraja birds (g/bird)

Treatments	1 st week	2 nd week	3 rd week	4 th week	5 th week	6 th week	7 th week	Treatment mean
T ₁	71.00	228.82	532.98	920.92	1374.32	1997.9	2678.32	1114.89
T ₂	72.24	227.59	533.25	918.32	1363.14	1984.47	2662.13	1108.73
T ₃	70.10	224.75	530.75	920.99	1353.45	1973.45	2648.78	1103.18
T ₄	71.48	227.64	534.83	924.51	1371.58	1993.88	2673.28	1113.87
T ₅	72.28	219.64	533.44	927.52	1357.34	1974.50	2648.33	1104.72
Week mean	71.42	225.69	533.05	922.45	1363.97	1984.84	2662.17	
'F' test		NS				S		
S.E.±	0.615	3.500	5.406	1.568	5.461	5.517	5.750	
C.D.	1.816	10.325	15.949	4.626	16.110	16.277	16.964	

NS= Non-significant

S= Significant

The cumulative feed consumption at seventh weeks of age were 2650.66, 2662.31, 2670.31, 2678.03 and 2680.33 g, respectively in T₁, T₂, T₃, T₄ and T₅ treatments groups. The cumulative feed consumption of Giriraja poultry birds for the treatment groups T₁ was lesser as compared to T₂, T₃, T₄ and T₅ group. The significant difference in cumulative weekly feed consumption was found from second week onward. The trend of significantly cumulative feed consumption was recorded in T₁ (2650.66), T₂ (2662.31), T₃ (2670.31), T₄ (2678.03) and T₅ (2680.33) groups during fourth to seventh week. Ahmad *et al.* (2016) conducted the experiment to investigate the effects of different levels of coriander (*Coriandrum sativum*) seed powder on growth performance of broiler chickens. Result showed that the inclusion of coriander seed powder in broiler ration (T₃ group) significantly increased overall body weight and weight gain and feed consumption as compared to other groups. These results suggest that coriander powder in the diet could replace synthetic antibiotics and could be regarded as natural feed additives and growth promoters in poultry diets. Similar results were reported by Sujatha *et al.* (2010) and Sunbul *et al.* (2010). It may be due to adding coriander seed powder.

Effect of different herbals feed additives on average weekly overall feed efficiency of Giriraja poultry birds :

The data recorded on average weekly feed conversion ratio was calculated, tabulated and presented in the Table 3.

The average weekly feed efficiency at seventh week age were 3.31, 2.96, 2.82, 2.99 and 2.86 in T₁, T₂, T₃, T₄ and T₅ treatments groups, respectively. The FCR

was found to be statistically non-significant for different treatment group exception of second week. The better cumulative FCR observed during 2nd week in T₃ (1.52) and T₅ (1.41). It is showing the positive effects of supplementation of different herbals as a feed additives on poultry diet. Abo *et al.* (2016) found that the use of natural herbs which supplemented in drinking water at the rate of 300 ml/cubic meter significantly (P<0.05) increased the weight, feed conversion ratio (FCR) and dressing percentage (DP) as compare to control birds. The relative economic efficiency (REE) was upto 13 per cent improved by the herb supplementation. It can be concluded that feeding the herbal extract has significant positive effects on broilers general performance as feed efficiency is increased by 11 per cent and on mortality and sudden death cases. Gujral *et al.* (2005) this study was conducted to determine the potential of coriander seed powder the conclusion showed that feed conversion ratio over the experimental period was significantly better in the group receiving 2 per cent coriander seed than in the other treatment. Similar results which were reported by Hassan *et al.* (2011) birds were fed experimental diets coriander 0 per cent, 0.5 per cent and 1 per cent coriander oil. The results showed that the increase in the intestinal wall thickness indicate that the intestine is highly activated in digestion and absorption function that lead to increase of feed conversion ratio.

Windisch *et al.* (2014) who studied on the aspects of application of phytogetic products as feed additives for swine and poultry. The assumption that phytogetic compounds might improve the palatability of feed has demote yet been confirmed by choice- feeding studies. In total, available evidence indicates that phytogetic feed

Table 3 : Average weekly overall feed efficiency of Giriraja poultry birds (feed required per kg. body weight)

Treatments	1 st week	2 nd week	3 rd week	4 th week	5 th week	6 th week	7 th week	Treatment mean
T ₁	1.13	1.56	2.01	2.28	2.52	3.11	3.31	2.27
T ₂	1.12	1.54	2.02	2.22	1.96	2.94	2.96	2.11
T ₃	1.06	1.52	1.82	2.12	1.94	2.76	2.82	2.01
T ₄	1.04	1.54	1.81	2.24	2.11	2.69	2.99	2.06
T ₅	1.05	1.41	1.71	1.99	2.12	2.53	2.86	1.95
Week mean	1.085	1.51	1.93	2.17	2.32	2.806	2.988	
'F' test	NS	S			NS			
S.E.±	0.308	0.262	0.089	0.101	0.146	0.232	0.1629	
C.D.	0.091	0.077	0.263	0.298	0.431	0.686	0.655	

NS= Non-significant

S= Significant

additives may add to the set of non-antibiotic growth promoters for use in livestock. Naeemasa *et al.* (2015) conducted studies to investigate the effect of different levels of coriander (*Coriander sativum*) seed powder and recorded that feed conversion ratios improved with the inclusion of coriander powder in the diet throughout the experimental period.

Conclusion :

The results of the present investigation shows that the use of herbal supplements, *Tulsi* seed powder was found to be beneficial in poultry bird for its encouraging results in relation to body weight, feed consumption and

feed conversion efficiency. The overall performance benefits were better at 2 per cent *Tulsi* seed powder (T₅), followed by 2 per cent coriander seed powder (T₃), 1 per cent *Tulsi* seed powder (T₄), 1 per cent coriander seed powder (T₂) and control (T₁). Hence, supplementation of 2 per cent *Tulsi* seed powder was found more beneficial to live body weight gain, feed consumption and feed conversion efficiency of Giriraja poultry birds.

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