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EFFECT OF HERBAL DRUGS AS A FEED ADDITIVE IN BROILER RATION

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ABSTRACT
A trial was conducted to determine the effect of indigenous herbal drug (*Withania somnifera*, *Asparagus racemosus, Mucuna pruriens*) supllementation in diets on performance and blood parameters in broilers. Sixty six, day old commercial broiler chicks (VenCobb 400) were divided into groups of 33 birds in each and assigned two treatment diets with three replicate of 11 broilers each. All the birds were fed basal diets and in treatment group, birds were further supplemented with 2% of indigenous herbal drug per kg feed. Experiment was conducted for 42 days. Birds that fed indigenous herbal drug in diets show the significant effect on body weight gain, feed conversion ratio and dressing percentage and decreased feed intake. There was no significant difference for SGOT, SGPT, serum protein serum glucose and serum urea between the treatments. Thus, the results show that the indigenous herbal drug having a significant efffect on the performance of the broiler chicken during summer season.

INTRODUCTION

In poultry feed consumption play a major role in affecting net return from the poultry because about 65 to 70% of the total expenditure in terms of cash is spent on feed. To ensure more net return and to lessen the adverse effect of the synthetic feed additives on animal as well as on consumer's health; many of the herbal growth stimulators now a days are being used as an alternative feed additives in the poultry ration. There is some evidence from the earlier workers that the use of commercial blends of herbs (Herbagal) can reduce the cost of poultry production and increase the body weight (Majdanski , 1991). Later on, Sarma *et al*. (2001) have also reported significant increase in growth performance due to supplementation of herbal products. Further, the use of Digestarom (Herbal feed additives) was observed by Sirvydis *et al*. (2004) showed higher weight gain per bird without side effect on birds. Likewise, the use of microbial phytase in soybean meal based broiler diets containing low phosphorous shows non significant effect on the blood profile of broiler (Mondal *et al*., 2007). Thereafter, Khosravi *et al*. (2008) used of some feed additives as growth promoter in broiler ration gave better response. Further, Singh *et al*. (2008) used Ashwagandha and *Livkey* (Market herbal drug) as feed additives to enhance the growth rate.

The first objective of the present study was to examine the effect of diet supplementation with a mixture of some selected *indigenous herbs* on growth performance of broiler chickens. The second objective was to investigate whether this supplementation could have an effect on biochemical attributes and to compare this effect with the control group. The herbs used in this study was Ashvagandha(*Withania somnifera*), Satavari (*Asparagus racemosus*) and Kapi-Kachchu (*Mucuna pruriens*) as *Indigenous herbs*.

MATERIALS AND METHODS

The trials were conducted at the Poultry farm situated at Agriculture Farm of the Institute of Agriculture Sciences, Banaras Hindu University, Varanasi – 221005 (India). Sixty six, one day old (VenCobb-400) broiler chicks were divided into two groups (33 birds in each group) with three replication. The birds were kept under deep litter system. At the start of the experiment the broiler starter ration was fed to the control group from 2 day to 28 days containing 22% CP (Crude Protein) and 2.800 Mcal of ration and the same ration was mixed with 2% indigenous herbal drug / kg feed are fed to the treatment groups. Further broiler finisher ration containing 20% CP (Crude Protein) and 3.000 Mcal was given from 29 to 42 days aged chicks to the control one while treatment have fed the same finisher diet containing 2% indigenous herbal drug / kg feed (Tabel 1). Daily weighed amount of fresh feed was distributed in the feeder of each group and the feed residue left in the feeder was collected. To find out the consumed feed by each group of the chicks the feed residue was deducted from the amount of feed offered to each group. Similarly, the body weight gain (g) of each group was recorded at every week of interval to get the growth performance. Towards the end of trial five birds from each group were randomly selected and blood samples were collected from wing vein from each of the birds for the analysis of SGPT and SGOT by 2,4-DNPH method, serum protein in blood by Modified Biuret and Dumass method, serum glucose content by glucose oxidase and peroxidase (Tietz, GOD-POD) method,

and serum urea by Diacetyl monoxime DAM method. Finally, the data analyzed by SAS programme (SAS, 2004) using general linear model (GLM) significant differences among treatment means are separated using LSD method. The said trail was conducted in summer season.

RESULTS

(A) Physical parameter

Weekly body weight gain: At the start of experiment average body weight of each chick was 42g. The average body weight gain of broiler (kg/bird) from 1 to 6 week of age as influenced by dietary inclusion of indigenous herbal drug was observed as 0.100, 0.290, 0.340, 0.540, 0.450, 0.450 kg and in control as 0.090, 0.240, 0.320, 0.520, 0.420, 0.430 kg in different groups (Table 2) in summer season. Further when the data's were analyzed statistically revealed significant ($p < 0.05$) difference between control and treatment groups; higher in treatment group than control one (Tabel 3).

Weekly feed consumption: The average weekly feed consumption of broiler (kg/bird) from 1 to 6 week of age as a result dietary inclusion of indigenous herbal drug is presented in Table 2. Statistical analysis revealed that significant ($p < 0.05$) difference in weekly feed consumption of broiler due to dietary indigenous herbal drug inclusion in the ration (Tabel 3). The weekly feed consumption from one to sixth week of age was 0.230, 0.370, 0.530, 0.760, 0.770, 0.960 and 0.210, 0.360, 0.510, 0.740, 0.750, 0.930 kg in control and treatment groups respectively.

Weekly feed conversion efficiency: The average weekly feed conversion efficiency (Feed consumed/kg body weight) from one to sixth week of age was 2.58, 1.57, 1.67, 1.44, 1.83, 2.26 and 1.98, 1.23, 1.49, 1.37, 1.67, 2.09 kg in control and treatment groups respectively (Tabel 2). Further data was statistically analyzed and showed significant ($p < 0.05$) difference between control and treatment groups (Tabel 3) might be due to dietary inclusion of indigenous herbal drug. That F.E. *(*feed efficiency) was always better in treatment group.

Table 1: Composition of experimental diets

Ingredients	Control group		Treated group	
	BS	BF	BS	BF
Moisture (%)	10.5	10.5	10.5	10.5
Crude protein (%)	22	20	22	20
Crude fiber (%)	4.1	4.1	4.1	4.1
Fat (%)	5.0	5.0	5.0	5.0
Calcium	1.0	1.0	1.0	1.0
Phosphorus	0.5	0.5	0.5	0.5
Vitamin A, IU (units/ kg diet)	6000	6000	6000	6000
Vitamin D, IU (units/ kg diet)	1500	1500	1500	1500
Thiamin, (mg/ kg diet)	2	2	2	2
Riboflavin (mg/ kg diet)	4	4	4	4
Pyridoxine, (mg/ kg diet)	2	2	2	2
Vitamin B_{12},(mg/ kg diet)	0.01	0.01	0.01	0.01
Lysine (%)	1	1	1	1
Methionine + cystine (%)	0.75	0.75	0.75	0.75
Energy ME (K cal/ kg)	2800	3000	2800	3000
Moisture (%)	0.00	0.00	2	2
(W:A:M)Indigenous herbal drug (%/ kg feed)	10.5	10.5	10.5	10.5

BS-Broiler starter, BF-Broiler finisher

Table 2: Weekly body weight gain (kg/bird), weekly feed consumption (kg/bird) and weekly feed conversion efficiency of broiler from 1 to 5 week of age as influenced by dietary inclusion of indigenous herbal drug

Weekly body weight	Control group (kg/bird)	Treated group (kg/bird)
1st week	0.090	0.100
2nd week	0.240	0.290
3rd week	0.320	0.340
4th week	0.520	0.540
5th week	0.420	0.450
6th week	0.430	0.450
Weekly feed consumption	Control group(kg/bird)	Treated group(kg/bird)
1st week	0.230	0.210
2nd week	0.370	0.360
3rd week	0.530	0.510
4th week	0.760	0.740
5th week	0.770	0.750
6th week	0.960	0.930
Weekly feed conversion efficiency	Control group (kg feed/kg b.wt)	Treated group (kg feed/kg b.wt)
1st week	2.58	1.98
2nd week	1.57	1.23
3rd week	1.67	1.49
4th week	1.44	1.37
5th week	1.83	1.67
6th week	2.26	2.09

Table 3: Effect of indigenous herbal drug supplementation on various attributes of broiler.

Attributes	Control group	Treated group	p < 00.5
Weekly body weight (kg/bird)	0.430	0.450	*
Weekly feed consumption (kg/bird)	0.960	0.930	*
Weekly feed conversion efficiency	2.26	2.09	*
SGPT (U/L)	15.32	15.24	**
SGOT (U/L)	96.35	96.33	**
Serum protein (g/dl)	6.88	6.81	**
Serum glucose (mg/dl)	184.5	183.55	**
Serum urea (mg/dl)	24.53	24.43	**

*Significant ($p < 0.05$), ** Non Significant

(B) Biochemical attributes

The Biochemical attributes of broiler of indigenous herbal drug is presented in Table 2. Concentration of SGPT (U/L), SGOT (U/L), serum protein (g/dl), serum glucose (mg/dl) and serum urea (mg/dl) of broiler chicken at the end of sixth week of age is 15.32, 96.35, 6.88, 184.50 and 24.53 and 15.24, 96.33, 6.81, 183.55 and 24.43 in control and treatment groups respectively.

DISCUSSION

Physical parameter

The average weekly body weight gain (kg/bird) upto sixth week of age were 0.430 and 0.450 kg in control and treatment groups respectively (Tabel 3). The data shows that the body weight gain is found to be significant higher in treatment group as compare to control group; might be due to dietary inclusion of indigenous herbal drug. Similar result was reported by Ram Niwas *et al.* (2011) used *Livkey* (herbal drug) as a feed additive

and Hosamani *et al*. (2004) used some feed additives based diet on performance of broiler production.

At the end of sixth week of age average weekly feed consumption was 0.960 and 0.930 kg in control and treatment group respectively (Tabel 3). In treatment group feed consumption was significantly less compared to control group. The overall average feed intake was high in the groups those where no feed additive was given to the broilers. Khosravi *et al*. (2008) have found same result by using some feed additives as growth promoter in broiler nutrition. Similar result was reported by Ram Niwas *et al*. (2011) used *Livkey* (herbal drug) as a feed additives.

It was observed at the end of sixth week of age 2.26 and 2.09 kg unit body weight in control and treatment groups respectively (Tabel 3). These data clearly shows that weekly feed conversion efficiency is significantly better in treatment group than control group; may be due to dietary inclusion of indigenous herbal drug which improve the liver function in treated group birds. Singh *et al*. (2008) used Aswagandha (*Withania somnifera*) as a feed additive showed higher performance in layers. Present finding collaborate with findings of aforesaid workers.

Biochemical attributes: Effect of indigenous herbal drug supplementation with diet had no effect on SGOT, SGPT, serum glucose, serum protein and serum urea. Correlated result was observed by Sirvydis *et al*. (2004) with using phytogenic feed additives on chicken broiler meat indices. Likewise, similar result was found by Mondal *et al*. (2007) by using microbial phytase in Soyabean meal based broiler diets. Later on, Singh *et al*. (2008) used Aswagandha (*Withania somnifera*) as a feed additive showed higher performance without any side effects on the biochemical attributes of layers. Recently, Ram Niwas *et al*. (2011) observed the same result while using *Livkey* (Herbal drug) as a feed additive on broiler production. Concentration of these plasma enzymes signified that the birds were apparently healthy throughout the experimental period which can also be correlated with the finding of survivability.

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