

Research Article

Evaluation of Growth Promoter-Boon and Its Effect on Growth Performance of Broilers

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[Received-13/07/2015, Accepted-23/07/2015, Published-02/08/2015]

ABSTRACT

An experiment was conducted with five types of herbal preparations viz (*Mentha piperita L.*) leaves, Turmeric (*Curcuma longa*) rhizome, Tulsi (*Ocimum tenuiflorum*) leaves Amla (*Phyllanthus emblica*) fruit and combination of these four named as Boon formulated by Natural Herbs and Formulations to study the performance of broilers(n=300). The better body weight gain and higher feed intake ($P<0.05$) were significant in Boon compared to control group throughout the experimental period. It cannot be excluded that beneficial effects of the supplements would be seen under less hygienic housing conditions and/or when using diets with Boon to be supplied enough the poly herbal. Consequently, it can be suggested that Boon can be used particularly in diets of Broilers birds where digestion problems at growing lead to scouring and a growth check. However, the Boon induced increase in the abdominal fat pad should be taken into account for carcasses quality and processing and deserves further Individual study.

Key words: Boon, Broiler, Feed conversion rate, Herbs, Carcasse

INTRODUCTION

Skeletal muscle growth is dependent upon the proliferation and differentiation of myogenic satellite cells (also termed adult myoblasts). Satellite cells are myogenic stem cells that play an important role in muscle growth by proliferating, differentiating, and fusing with adjacent muscle fibers [13]. Satellite cells during

the first week posthatch are sensitive to thermal conditions [10] and nutritional status [9, 14 and 18]. To modify total protein synthesis in vitro methionine (Met) concentration was altered from optimal levels used in the culturing of satellite cells [16]. Methionine is the first amino acid in all proteins and is an essential amino acid [17].

Herbal feed additives are commonly defined as plant derived compounds incorporated into diet to improve the productivity of livestock.

The natural herbal growth promoter remain active throughout the gastrointestinal tract and as a consequence, it exerts broad spectrum antimicrobial action, will enhance nutrient utilization [7]. Recently most of the antibacterial performance promoters have been banned because the feeding of antibiotics is risky [15]. On the other hand, herbs or products containing plant extracts, essential oils or main components of the essential oil are among the alternative growth promoters that are already being used in practice [19, 11, 1, 4 and 8]. Modern medical science has developed to a great extent; many farmers depend on plant parts and herbal remedies for indigenous poultry health management.

The present study was conducted at Natural Herbs and Formulations, Mandawar, Dehradun Road, Roorkee and DAV (PG) College, Dehradun to describe the effects of dietary with peppermint (*Mentha piperita L.*), Turmeric (*Curcuma longa*), Tulsi (*Ocimum tenuiflorum*), Amla (*Phyllanthus emblica*) and Boon; Boon is formulated by Natural Herbs and Formulations as a growth promoter. Parameters growth performance, carcasse and gastrointestinal tract characteristics in broilers were studied after the supplementation of these various growth promoters feed additives.

MATERIALS AND METHODS

A total of 300 seven days old broilers were taken from poultry house and marked them by the form of treatment and replica. We took three replicas for each treatment (diet with herbs) consisted 20 individuals (10 male and 10 female). The ingredients and composition of the basal diet (starter from 7 to 21 days of age, grower from 21 to 35 days of age and finisher from 36 to 42 days of age) were given as per company diet formula. All birds used in the experiment were cared for

according to applicable recommendations of the National Research Council (NRC, 1994). Temperature of room was set at 25°C for whole experiment.

Powder of individual and combination of peppermint (*Mentha piperita L.*) leaves, Turmeric (*Curcuma longa*) rhizome, Tulsi (*Ocimum tenuiflorum*) leaves Amla (*Phyllanthus emblica*) fruit was used with diet. Feed intake per replica was calculated for one-week periods and used to calculate the feed to gain ratio. Individual body weight was recorded each week. Mortality was recorded as it occurred. Four birds (2 females and 2 males) from each replication were slaughtered at day 42 to determine carcasse weight, dressing percentage, and weights of whole gut, empty gizzard, pancreas, edible inner organs and abdominal fat pad, and the length of the whole gut. The gut, from the oesophagus to the cloaca, and the organs were carefully excised. Any digesta remaining in the whole gut were emptied by gentle pressure. Weights of gizzard, weights of heart and liver were recorded as the weight of edible inner organs. Weights of gut and edible inner organs (g/100 g body weight), length of gut (cm/100 g body weight) were expressed as a portion of body weight.

The complete randomized model (CRD) was used to analyze data for weight gain, feed intake, feed efficiency and characteristics of carcasse and gut. All data were analyzed according to the ANOVA model, using the Statistical Package GEN STAT. When significant treatment effects were observed, differences between treatment means were tested by Duncan's multiple range test (GEN STAT). The level of statistical significance was pre-set at $P < 0.05$.

RESULTS AND DISCUSSION

Mortality was lower in birds fed the herbal in diets than in birds fed control diets for the entire growing periods (0.00 vs. 2.88%, respectively). There was no clear effect of herbal treatment on mortality and number of birds removed with leg

problems. Body weight gains, feed intake and FCR in broilers fed the control diet and diets supplemented with herbal growth promoter sources.

In general no differences in body weight gain, feed intake or FCR were observed in broilers fed the different experimental diets. Maximum feed intake was observed in poly herbal treatment (Boon) followed by *Mentha piperita L.* leaves, *Phyllanthus emblica* and *Ocimum tenuiflorum* leaves respectively and least gain was observed in *Curcuma longa* rhizome as compare to control. Although it was expected that supplementing the dietary herbs [5 and 4] or plant extracts [6 and 11] would stimulate the growth performance of broilers, research on herbs, plant extracts, essential oil and/or the main components of the essential oil yielded contradicting results [1, 2, 3, 4 and 8].

These results indicate that the Boon had higher growth promoting efficacy followed by *Mentha piperita* at an early stage of the bird's life. This result agrees with those reported by [5], who noted that the broilers given a diet with *Mentha piperita* (7 to 28 days) had a similar body weight gain to those given the control diet. Nevertheless, it has been suggested that *Mentha piperita* appears to be the most potential tool in combating bacterial diseases in poultry [1 and 8]).

The higher body weight gain observed in broilers fed the poly herbal and respective herbal diet may be related to the reported properties of menthol [12]. The active principles of essential oils act as a digestibility enhancer, balancing the gut microbial ecosystem and stimulating the secretion of endogenous digestive enzymes and thus improving growth performance in poultry [5, 12 and 19]. Therefore, the main compound of each herbal may probably improve the digestibility of diet as a digestion stimulant, and hence increase the nutrient entry rate at an early stage of bird's life without affecting feed conversion.

Table 2 shows that the carcasse weight and dressing percentage were not significantly affected by peppermint or *Mentha piperita* and other herbal treatment, while the abdominal fat pad of broilers in the herbal treatment group was higher ($P < 0.05$) compared to the control. From 7 to 35 days of age, although a beneficial effect of peppermint as menthol source on body weight gain in broilers, the higher abdominal fat in the peppermint birds may be a problem. The higher abdominal fat may be due to the fast growth rate from 7 days to 35 days of age because the fast growth rate is accompanied by increased body fat deposition [20].

Therefore, it may be said that the peppermint supplemented diet has a disadvantage in slaughter performance although no significant differences in carcasses weight and dressing percentage were observed among treatments.

Study indicated that poly herbal treatment had a higher growth promoter effect than the individual at an early stage of the bird's life. It cannot be excluded that beneficial effects of the supplements would be seen under less hygienic housing conditions and/or when using diets with leaves to be supplied enough the poly herbal. Consequently, it cannot be excluded that beneficial effects of the supplements would be seen under less hygienic housing conditions and/or when using diets with Boon to be supplied enough the poly herbal. Consequently, it can be suggested that Boon can be used particularly in diets of Broilers birds where digestion problems at growing lead to scouring and a growth check. However, the Boon induced increase in the abdominal fat pad should be taken into account for carcasses quality and processing and deserves further Individual study.

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Table1. Body weight gain, feed intake and FCR in broilers given diets without or with various treatments of herbal promoters.

Measurement	Age (Days)	Control	<i>Mentha piperita</i> L. leaves	<i>Curcuma longa</i> rhizome	<i>Ocimum tenuiflorum</i> leaves	<i>Phyllanthus emblica</i> fruit	(BOON)
Initial body weight (g)	7	149.26	147.74	150.58	146.66	149.8	149
Body weight gain (g)	7 to 21	450.93	522.26	501.35	517.61	521.92	591.97
	7 to 35	1221.6	1497.31	1527.35	1523.31	1528.72	1676.04
	7 to 42	1791.3	2223.14	2289.27	2253.69	2320.92	2594.78
Feed intake (g)	7 to 21	780	877.4	812.2	823	840.3	899.8
	7 to 35	2162.2	2455.6	2367.4	2345.9	2400.1	2497.3
	7 to 42	3224.4	3630.2	3456.8	3358	3527.8	3684.6
FCR	7 to 21	1.73	1.68	1.62	1.59	1.61	1.52
	7 to 35	1.76	1.64	1.55	1.54	1.57	1.49
	7 to 42	1.8	1.59	1.51	1.49	1.52	1.42

Table2. Carcasse weight (g), dressing percentage and organ weights (g or cm/100 g body) in Broilers given diets without or with herbal treatment

Component	Control	<i>Mentha piperita</i> L. leaves	<i>Curcuma longa</i> rhizome	<i>Ocimum tenuiflorum</i> leaves	<i>Phyllanthus emblica</i> fruit	Boon	SEM
Carcasse Weight	1342.5	1387.35	1395.45	1374.72	1380.63	1414.78	14.5
Dressing percentage	65.45	65.89	65.67	66.32	65.52	66.12	0.84
Gut length	11.67	11.61	11.56	11.5	11.43	11.61	0.11
Gut weight	10.34	9.89	10.02	10.12	9.98	10.23	0.14
Edible organ	4.87	4.82	4.85	4.8	4.78	4.9	0.05
Abdominal fat pad	1.52	1.82	1.76	1.73	1.78	1.59	0.06

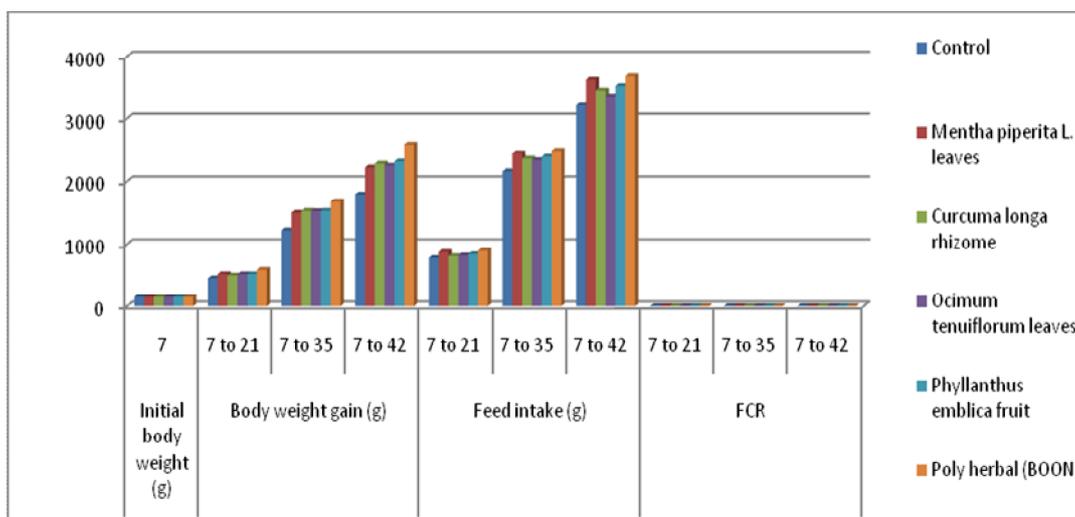


Figure1. Body weight gain, feed intake and feed to gain ratio in broilers given diets without or with various treatment of herbal promoters

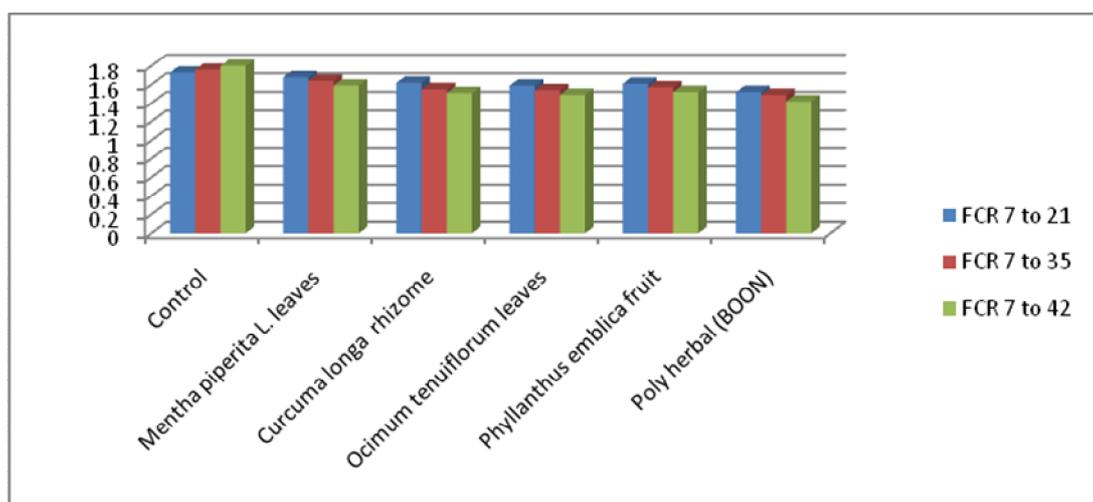


Figure2. FCR of broilers in given diets with various treatments of herbal promoters.