

Effect of Dietary Supplementation of Various Levels of Fermacto[®] on the Performance of Broiler Chicks

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ABSTRACT

Two hundred and forty one day old broiler chicks were randomly divided into four groups and each group was further divided into 6 replicates of 10 chicks each. Fermacto[®] (Probiotic) was supplemented at the rate of 0, 1.5, 2.0 or 2.5 kg/ton of feed, respectively. It was observed that supplementation of Fermacto[®] in broiler ration at 2.0 kg/ton of feed had better ($P < 0.05$) weight gain and feed efficiency, whereas, feed consumption and dressing percentage did not differ among the groups.

Key Words: Probiotic supplementation; Broiler diet; Growth performance

INTRODUCTION

The inclusion of feed additives into a compounded feed is a common practice in animal feed industry. Many additives are derived from fermentation processes using microorganisms such as bacteria or fungi. Most common microorganisms used in the fermentation processes are *Aspergillus niger*, *Aspergillus oryzae*, *Saccharomyces cerevisiae*, *Lactobacillus acidophilus* and *Lactobacillus lactis* etc. Microbial culture regulates the microbial environment of intestines, decreases digestive disturbances, inhibits pathogenic intestinal microorganisms and improves feed conversion efficiency (Dhingre, 1993; Jayakumar *et al.*, 1996). Fermacto is the feed additive, derived from *Aspergillus mycelium* (Table I).

Table I. Chemical composition of Fermacto

Ingredients		INGREDIENTS	
Protein %	16.40	Valine %	0.59
Fat %	1.80	Biotin, mg/Kg	0.65
Fiber %	28.90	Calcium %	0.22
Ash %	10.30	Phosphorus %	0.05
Moisture %	7.00	Potassium %	0.35
Carbohydrate %	35.60	Sodium %	0.29
Total Sugar %	2.50	Chloride %	0.21
Starch %	10.80	Magnesium %	0.14
Vitamin B ₁₂ , mg/Kg	0.03	Sulfur %	0.21
Pantothenic acid, mg/Kg	3.89	Aluminium, mg/Kg	63.00
Thiamine HCl, mg/Kg	1.63	Iron, mg/Kg	14.00
Riboflavin, mg/Kg	7.59	Copper, mg/Kg	10.00
Niacin, mg/Kg	26.20	Zinc, mg/Kg	23.00
Choline Chloride, mg/Kg	0.15	Manganese, mg/Kg	14.00
Pyridoxine, mg/Kg	1.10	Cobalt, mg/Kg	1.60
Lysine %	0.38	Selenium, mg/Kg	1.12
Methionine %	0.18	Hydroxyproline %	0.01
Cystine %	0.23	Arginine %	0.46
Tryptophan %	0.12	Aspartate %	0.94
Glycine %	0.54	Serine %	0.64
Histidine %	0.26	Glutamate %	2.01
Leucine %	1.11	Proline %	0.91
Isoleucine %	0.50	Alanine %	0.82
Phenylalanine %	0.44	Mold, mpn/g	400
Tyrosine %	0.22	Yeast mpn/g	100
Threonine %	0.54		

Fermacto enhances digestibility of the mono-gastric animals by providing nutrients and mycelial fiber for the proliferation of intestinal bacteria. Consequently, increased absorption of digested feed takes place which enhances the growth and gross margin of profit in broilers by feeding at a level 1-2 g/kg (Mamiek, 1993; Tangendjaja, 1993).

The information on the effect of Fermacto as growth promoter in broilers reared under local condition is limited. Thus this study was conducted during summer season (May and June) to ascertain effects of its supplementation in feed on the production performance of broilers.

MATERIALS AND METHODS

Two hundred and forty, one day old hubbard broiler chicks of approximately uniform weight were randomly divided into four groups of sixty chicks each. Each group was further divided into six replicates of 10 chicks each. The birds were reared in brooder batteries during the first four weeks and then shifted to grower batteries till the sixth weeks of age.

Treatment A (Control) contained both starter and finisher commercial feeds (without Fermacto[®] supplementation). Treatments B, C and D contained both starter and finisher feeds supplemented with Fermacto[®] at the level of 1.5, 2.0 and 2.5 kg/ ton of feed, respectively (Table II). All the treated feeds were offered *ad libitum* through out the experimental period of 42 days. The observations recorded during the experiment were, initial body weights, weekly gain in body weights, feed consumption and feed efficiency. At the end of experiment, 10 birds from each group were randomly selected and slaughtered to determine the dressing percentage.

Table II. Composition of broiler starter and finisher rations

Ingredients %	Starter	Finisher
Maize	49.214	59.00
Rice broken	10.00	10.00
Cotton seed meal (sol.ext)	5.00	3.176
Soybean meal	17.09	10.00
Fish meal	6.00	6.00
Corn gluten 60%	6.00	6.00
Grinder Marble Chips (CaCO ₃)	0.895	0.841
DCP	1.199	0.950
Molasses	3.00	3.00
Vit. & Min mix	0.50	0.50
Oil	0.931	0.203
Methionine	0.075	0.071
Lysine	0.096	0.259
Estimated Chemical Composition		
Dry matter, %	89.24	90.41
Crude Protein %	22.00	19.00
ME (Kcal/ kg)	3050	3100
Ether extract, %	5.11	5.16
Crude fiber, %	3.50	3.23
Calcium, %	1.60	0.90
Available phosphorus, %	0.44	0.40
Lysine, %	1.10	1.00
Methionine, %	0.56	0.45
Linoleic acid, %	1.21	1.33

RESULTS AND DISCUSSION

The mean values of weight gain, feed consumption and feed efficiency are presented in Table III. The data revealed that broilers in group C fed on the diet supplemented with Fermacto® 2 kg/ton of feed had higher ($P<0.05$) weight gain (1840 g) than those of group A (1664 g) and group B (1714 g), whereas group C (1840 g) and group D (1810 g) were non-significant ($P>0.05$). The increase in weight gain was due to improvement in digestibility of Fermacto® treated broiler diets at levels of 2.0 and 2.5 kg/ton of feed. Kim *et al.* (1988) confirmed the present results that supplementation with probiotics increased digestibility of broiler ration. The results are also in accordance with earlier reports (Meinz, 1993; Tangendjaja, 1993) that supplementation of Fermacto in broiler diet resulted in weight gain than those using diet without supplemented of Fermacto®. The results of present study indicated no significant difference in term of feed consumption among the groups, it is in agreement with the findings of Samanta and Biswas (1995) who reported that probiotic supplementation did not affect feed consumption. Wambeke and Peeters (1995) recorded similar trend

Table III. Mean weight gain, feed consumption and feed efficiency (0-6 Weeks)

Description	Treatment			
	A	B	C	D
Weight gain (g)	1664 ^a	1714 ^b	1840 ^a	1810 ^a
Feed Consumption (g)	3383 ^a	3385 ^a	3433 ^a	3443 ^a
Feed efficiency	2.03 ^a	1.97 ^b	1.86 ^d	1.89 ^c
Dressing percentage	63.90 ^a	64.12 ^a	64.05 ^a	63.97 ^a

Different superscripts in a row differ ($P<0.05$).

when broiler diet was supplemented with Paciflor® (Bacillus CIP strain 5832).

The feed efficiency of groups A, B, C and D was 2.03, 1.97, 1.86 and 1.89, respectively. All the treatment groups supplemented with Fermacto® showed better ($P<0.05$) feed efficiency over the control group. Similar findings were observed by supplementation of Fermacto® in broiler ration and recorded 8.2% increase in feed efficiency (Ahmed & Sheheima, 1993). Verma and Agarwal (1996) also strengthened the feed efficiency values of present study and explained growth stimulators improves the gut microbial profile in broilers. The dressing percentage of groups A, B, C and D were 63.9, 64.12, 64.05 and 63.97, respectively. The means were not different statistically ($P>0.50$) among different groups. These results coincide with the findings of Mandal *et al.* (1996) who reported that feeding probiotics did not show significant difference in term of dressing percentage of broilers.

It was concluded from this study that supplementation of broiler diet with Fermacto® rate of 2.0 kg/ton of feed showed best performance in terms of weight gain and feed efficiency.

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