



## ORIGINAL ARTICLE

# The effects of *protexin* probiotic different levels on growth performance, carcass characteristics and some of blood parameters in male geese

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### ABSTRACT

The objective of this experiment was to evaluate the effects of *protexin* probiotic different in the diet of male geese on the growth performance, carcass characteristics and some of blood parameters in male geese. Geese were allotted to 4 experimental groups in a complete randomized design, with 3 replicates per experimental groups and 8 geese per separate boxes. The levels of *protexin* probiotic used were 0, 50, 75 and 100 gr/ton of diet. On days 15, 30 and 45 performance, some of blood parameters and carcass characteristics were assessed. Dietary probiotic significantly improved weight gain and feed efficiency whereas feed intake wasn't significantly altered. In addition, carcass and breast weights were also significantly increased in geese feed probiotic compared to the control geese. But didn't observed significant change in serum cholesterol, triglyceride, calcium, phosphorus and total protein concentration of geese. Overall, these data suggest that the probiotic different levels may improve growth performance of geese.

**Key-words:** probiotic, performance, carcass, blood, geese

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### INTRODUCTION

Probiotic is considered as live microbial feed supplementation that benefit of on avian by intestinal microbial balanced improvement. Also, it plays an important role in prevent of carcass contamination of intestinal pathogens during processing and growth stimulate rate and feed efficiency on growing chick [1]. Tortuero [2] stated that the probiotics include enzymes, yeast and live bacteria, which contribute to maintain balance in intestinal micro flora. On the other hand, most of the reported on probiotics focuses on the use of various strains of *Lactobacillus*. However, several reports indicate favorable results with broiler chickens, turkey poults and layers strains.

*Protexin* is one of the commercial probiotics preparations containing a unique mixture of micro organs, which are generally regarded as safe by the American Food and Drug Administration [3]. On the whole, no study has been reported on the use of *protexin* probiotic supplementation in male geese diets. Thus, the aims of this research were to investigate the effects of probiotic different levels on growth performance, carcass characteristics and some of blood parameters in male geese.

### MATERIALS AND METHODS

A total of 98 1-day-old male geese were used in the present experiment. The experiment design was completely randomized, whose levels of *protexin* probiotic include bacteria stain nine with amount 0, 50, 75 and 100 gr/ton of diet, totaling 4 treatments and 3 replicates of 8 male geese with mean 70 gr for 45 day used maintained in separate boxes. Basic diet on soybean meal-corn according to national research association recommends 1991 regulate [4]. Geese had ad libitum access to feed and water. In each box, bird body weight and food intake were recorded on days 0, 15, 30 and 42 post-hatching and thereafter mean body weight gain, food intake, and food conversion ratio were calculated for each box (replicate) between 0 and 15, 16 and 30 and 30 and 45 days. In each time period, body weight gain was calculated

and expressed as grams per bird. Food intake (g of food intake/bird) over the entire grow-out period was calculated by totalling food consumption in each time interval between each bird sampling. Food conversion ratio (g of food intake /g of body weight gain) was calculated by dividing total food intake by total weight gain in each box.

On day 45, three geese per experimental groups were randomly selected for organ weights and blood samples. Weights of the eviscerated hot carcass, breast muscle, liver and gizzard were recorded and the corresponding percentages (% of live body weight) were calculated. Blood samples were collected in non-heparinised blood sterile by cardiac puncture. Then, the serum cholesterol, triglyceride, calcium, phosphorus and total protein concentration were measured using a colrimetric commercial kit. Results were analyzed by ANOVA using the GLM procedure of SAS software (SAS institute, 2003) [5].

## RESULTS

Performance data for geese fed protexin is detailed in table 1, 2 and 3. Weight gains were markedly increased in geese supplemented with protexin compared to the control geese during the 0-15, 16-30 and 31-45 day of age of geese ( $p < 0.05$ ). Although the differences were not statistically significant, it was noted that the food intake numerically increased in treated geese compared to the not supplemented geese. Food conversion ratio was significantly improved in dietary protexin supplemented geese compared to the control geese during the 31-45 day of age geese.

As shown in table 4, the relative weights of the carcass and the breast were also significantly increased in geese supplemented with protexin compared to the control geese ( $p < 0.05$ ). By contrast, the wing, thigh and liver weights were not significantly altered in the treated geese.

In addition, there were no significant treatment effects on serum cholesterol, triglyceride, calcium, phosphorus and total protein concentration of geese (Table 5).

Table 1: Effect of protexin probiotic on body weight gain, feed intake and food conversion ratio in 0-15 day of age of geese

Treatments	(1- 15 day)		
	BWG	FI	FCR
Control	637.918 <sup>b</sup>	1049.41	1.645
Protexin 50 gr/ton	658.250 <sup>a</sup>	1054.03	1.601
Protexin 75 gr/ton	653.023 <sup>a</sup>	1058.25	1.620
Protexin 100 gr/ton	664.071 <sup>a</sup>	1061.50	1.598
SEM	4.430	17.066	0.028
P-Value	0.0079	0.9617	0.6379

<sup>a-b</sup> Averages in a column with different superscript letters are significantly different

Table 2: Effect of protexin probiotic on body weight gain, feed intake and food conversion ratio in 16-30 day of age of geese

Treatments	(16- 30 day)		
	BWG	FI	FCR
Control	1195.25 <sup>b</sup>	2755.25	2.305
Protexin 50 gr/ton	1242.00 <sup>ab</sup>	2790.03	2.247
Protexin 75 gr/ton	1253.00 <sup>a</sup>	2764.50	2.207
Protexin 100 gr/ton	1236.50 <sup>ab</sup>	2781.75	2.250
SEM	16.291	21.673	0.030
P-Value	0.01187	0.6675	0.2063

<sup>a-b</sup> Averages in a column with different superscript letters are significantly different

Table 3: Effect of protexin probiotic on body weight gain, feed intake and food conversion ratio in 31-45 day of age of geese

Treatments	(31- 45 day)		
	BWG	FI	FCR
Control	1385.50 <sup>b</sup>	3269.25	2.360 <sup>a</sup>
Protexin 50 gr/ton	1479.25 <sup>a</sup>	3315.00	2.241 <sup>b</sup>
Protexin 75 gr/ton	1453.07 <sup>a</sup>	3297.50	2.269 <sup>b</sup>
Protexin 100 gr/ton	1462.25 <sup>a</sup>	3338.75	2.283 <sup>b</sup>
SEM	11.312	11.023	0.019
P-Value	0.0004	0.0755	0.0073

<sup>a-b</sup> Averages in a column with different superscript letters are significantly different

Table 4: Effect of protexin probiotic on carcass, breast, wing, thigh and liver in 45 day of age of geese

Treatments	Carcass (gr)	Breast (gr)	Wing (gr)	Thigh (gr)	Liver (gr)
Control	2147.50 <sup>b</sup>	447.143 <sup>b</sup>	358.041	520.582	63.137
Protexin 50 gr/ton	2182.50 <sup>a</sup>	462.050 <sup>a</sup>	363.250	526.541	63.187
Protexin 75 gr/ton	2177.09 <sup>a</sup>	459.033 <sup>ab</sup>	360.092	533.750	64.299
Protexin 100 gr/ton	2194.25 <sup>a</sup>	465.078 <sup>a</sup>	367.501	517.521	64.160
SEM	9.546	4.057	1.718	2.299	0.251
P-Value	0.0274	0.0421	0.0607	0.0715	0.0693

<sup>a-b</sup> Averages in a column with different superscript letters are significantly different

Table 5: Effect of protexin probiotic on serum cholesterol, triglyceride, calcium, phosphorus and total protein concentration in 45 day of age of geese

Treatments	Total Protein (mg/dl)	Calcium (mg/dl)	Phosphorus (mg/dl)	Cholesterol (mg/dl)	Triglyceride (mg/dl)
Control	4.27	10.23	3.51	153	63.66
Protexin 50 gr/ton	4.20	10.85	3.37	159.67	56.66
Protexin 75 gr/ton	4.35	10.31	3.44	147.67	56
Protexin 100 gr/ton	4.26	11	3.62	166.67	65.33
SEM	0.2217	0.6152	0.3205	16.6352	6.3558
P-Value	0.9647	0.7500	0.9498	0.8563	0.6415

<sup>a-b</sup> Averages in a column with different superscript letters are significantly different

## DISCUSSION

Based on the results of present study, the dietary supplementation of protexin in geese can be seen as an effective tool to improve the weight gain and feed conversion ratio whereas, difference in feed intake among all the diets were non-significant. These results are in line with the finding of Anjum *et al.* [6] who, showed that weight gain and feed conversion ratio were significantly improved in chicks fed with protexin-supplemented diets compared to control diets but, feed intake was not significantly altered throughout protexin than the whole experimental period. Also, Aftahi *et al.* [7] observed that dietary protexin supplementation with 0.1 gr protexin boost per 1 liter of drinking water improved body weight gain and feed conversion ratio in broiler chickens from 0 to 35 days whereas, feed intake was not significantly altered at the 35<sup>nd</sup> day of age.

All of the geese fed with protexin had significantly better feed conversion ratio than the control geese, these effects may be due to higher body weight and lower feed intake in the geese fed with protexin. In the other hand, it is stated that decreasing of pH of digestive organs using probiotics could lead to better digestion, absorption and utilization of nutrients [8, 9, 10]. These results agreement to the findings of Fuller [11] and Patterson and Burkholder [12] had explained the mechanism of probiotics to pathogen inhibition by competition for nutrients, production of toxic condition and compounds and competition for binding sites on the intestinal epithelium. By contrast, Hossain *et al.* [13]; Kwon *et al.* [14] and Priyankarage *et al.* [15] demonstrate that, birds fed different level of probiotics had no significant effect on the body weight and feed conversion ratio. Also, Panda *et al.* [16] stated that the body weight gain at the 6<sup>th</sup> week of age were similar in all the groups of dietary treatments.

The carcass and breast weight of geese in the present study were markedly increased when geese have been treated with 50, 75 and 100 gr/ton protexin compared to the control group. These results were in contrary with report of Islam *et al.* [17] that showed no significant effects of protexin (1, 2 and 3 gr protexin/ 10 liters drinking water) in broiler chickens on carcass yield and breast weight on day 35 of age. Baidya *et al.* [18] and Mandal *et al.* [19] stated that probiotics feeding didn't have any influence on the carcass yield. The present findings also revealed that there was no significant difference in the weight of wing, thigh and liver among the different groups. These results were in agreement with report of Islam *et al.* [17] who demonstrate that, there were no significant treatment effects on thigh, wing and liver of broiler chickens.

In the present study, didn't observed significant change in serum cholesterol, triglyceride, calcium, phosphorus and total protein concentration of geese. In Parallel, Islam *et al.* [17] stated that, birds fed different level of protexin had no significant effect on the serum triglyceride concentration. On the contrary, Islam *et al.* [17] demonstrate that, dietary protexin probiotic supplementation (1 and 3 gr/10 liters drinking water) reduced serum cholesterol concentration of broiler chickens.

As a conclusion, dietary protexin probiotic addition significantly improve growth performance and carcass yield whereas didn't observed significant change in serum cholesterol, triglyceride, calcium, phosphorus and total protein concentration of male geese.

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