



ISSN (E): 2277- 7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2022; SP-11(3): 490-493
© 2022 TPI
www.thepharmajournal.com
Received: 02-01-2022
Accepted: 05-02-2022

K Selvarasu
Livestock Farm Complex,
Veterinary College and Research
Institute, Salem, Tamil Nadu
Veterinary and animal Sciences
University, Tamil Nadu, India

V Ramesh
Livestock Farm Complex,
Veterinary College and Research
Institute, Salem, Tamil Nadu
Veterinary and animal Sciences
University, Tamil Nadu, India

Cost effectiveness of dietary skim milk powder supplementation on broilers during starter and finisher phase

K Selvarasu and V Ramesh

Abstract

An experiment was conducted in commercial broiler chicks (Vencobb) for a period of six weeks to study the dietary supplementation of skim milk powder with respect to body weight and cumulative feed consumption at sixth week, total feed cost per bird, total cost of production per kg live weight, total income per bird, net profit per kg live weight, and net profit per bird Rs. These broiler chicks were weighed and randomly allotted into five treatment groups with four replicates of ten chicks each and fed with basal diet as T₁ (control), T₂ (basal diet + 0.25 per cent skim milk powder), T₃ (basal diet + 0.5 per cent skim milk powder), T₄ (basal diet + 0.75 per cent skim milk powder) and T₅ (basal diet + 1.00 per cent skim milk powder) at starter and finisher phase. The dietary skim milk powder supplementation in broiler diet on body weight and cumulative feed consumption revealed significant ($P < 0.05$) difference between treatment groups at sixth weeks of age. The T₂ group (basal diet + 0.25 per cent skim milk powder) recorded the lowest production cost per kg live weight (Rs 63.31) and highest net profit per kg live weight (Rs 21.69) and net profit per bird (Rs 41.92). Based upon this study, it is concluded that supplementation of skim milk powder in broiler basal diet at the level of 0.25 per cent (T₂ group) increased net profit per kg live weight and net profit per bird in a cost effective way.

Keywords: Broiler, cost effectiveness, production performance, skim milk powder

Introduction

Broiler production as a meat source developed in the last decades and this development combined to the development of other industries like feed industry. High quality feed to broilers depends on the availability of raw materials, nutritive value and cost. A great concern in poultry enterprise is to lower feed cost and consumption to improving profitability of producers. (Kamran *et al.*, 2004) [4]. Improving feed quality by increasing protein level in rations may enhance growth performance and increase muscle growth in broilers. Many studies showed that using different protein sources as supplements in broiler rations to increase performance and meat production (N.R.C 1994) [10].

Protein supplements in broiler feed can be divided to proteins from animal sources and proteins from plant sources. The main sources of plant proteins used in broiler feed are soybean meal, groundnut cake, sunflower cake and the most sources of animal proteins used in broiler feeds are fish meal, meat and bone meal and skim milk powder. Skim milk powder contains a special type of proteins named casein which was used as a source of protein supplement in broilers feed. Therefore, this study was designed to evaluate the effect of skim milk powder supplementation on the growth performance and cost effectiveness of broilers by expected to improve cumulative feed consumption and body weight, lowering the total production cost per live kg body weight and increasing the net profit per live kg body weight.

Materials and Methods

A biological study was conducted with two hundred sex-separated day-old, commercial broiler (Vencobb) chicks belonging to single hatch. These chicks were wing banded, weighed and randomly allotted into five treatment groups with four replicates of ten chicks each. All chicks were reared up to 6 weeks in deep litter system in open sided broiler house under standard managerial conditions throughout the experimental period. The treatment groups consisted of basal diet T₁ (control), T₂ (basal diet + 0.25 per cent skim milk powder), T₃ (basal diet + 0.50 per cent skim milk powder), T₄ (basal diet + 0.75 per cent skim milk powder) and T₅ (basal diet + 1.0 per cent skim milk powder).

Corresponding Author
K Selvarasu
Livestock Farm Complex,
Veterinary College and Research
Institute, Salem, Tamil Nadu
Veterinary and animal Sciences
University, Tamil Nadu, India

The experimental feed was formulated according to the Vencobb standards by supplementing skim milk powder at different levels during starter and finisher phases. All the diets were isocaloric and isonitrogenous. The broiler pre starter, starter and finisher diets will be fed *ad libitum* to the birds from 1 to 14, 15 to 28 and 29 to 42 days of age, respectively. Data on body weight and cumulative feed consumption will be recorded at sixth week. Relative economics of broilers fed diets supplemented with skim milk powder was worked out to evaluate the cost effectiveness using the prevailing market rates. The data collected on body weight and cumulative feed consumption at sixth week were subjected to statistical analysis as per the methods suggested by Snedecor and Cochran (1989) [12]. Angular transformation was applied to percentages wherever needed before carrying out statistical analysis.

Results and Discussion

The data on mean body weight (g) and cumulative feed consumption of broilers at 6 weeks of age as influenced by dietary supplementation of skim milk powder are presented in Table 1

The mean body weight in broilers showed significant ($P < 0.05$) difference between treatment groups at sixth week of age. The highest sixth week body weight was recorded in T₄ group (1955.4 g) followed by T₂ (1938.7 g), T₃ (1923.2 g), T₅ (1904.1 g) groups and lowest in T₁ (1778.1 g) group. The results in this study concur with the findings of Omara (2012) [11] and Mysaa (2015) [9] who stated that improvement in body weight due to feeding of skim milk powder at finisher phase. These results are further supported by finding of Mansoub (2011) [6] the increase in body weight may be due to the higher digestibility of milk powder protein and an excellent amino acid balance profile found skim milk powder. These finding

do not agree with those of Mahmmud (2014) [7] who stated that dried yogurt powder supplementation does not affect significantly the weight of birds.

The mean cumulative feed consumption revealed significant ($P < 0.05$) difference between treatment groups at sixth week of age. The highest sixth week cumulative feed consumption was recorded in T₂ group (3149.9 g) followed by T₁ (3143.4 g), T₄ (3123.5 g), T₃ (3107.9 g) groups and lowest in T₅ (3103.8 g) group. These results are in agreement with the earlier reports of Apata (2008) [3] who concluded that feed intake from skimmed milk powder to broiler diets were significantly better than control diet. However, Kermanshahi and Rostami (2006) [5] whom found that there was no significant difference in feed intake for birds fed rations supplemented with dried milk powder.

The data on cost effectiveness of broilers reared up to 6 weeks of age as influenced by dietary supplementation of valine is presented in Table 2 and graphical representation of data is depicted in Figure 2.

The total feed cost per bird was the highest in T₅ group (Rs.117.19) and the lowest in T₁ group (Rs.108.24). The production cost per kg live weight was the highest in T₅ group (Rs.66.80) and the lowest in T₂ group (Rs.63.31). Total income per bird and net profit per bird ranges from RS.151.14 to Rs.166.21 and Rs.32.90 to Rs.41.92 respectively. The net profit per live body weight was the highest in T₃ group (Rs.20.90) and the lowest in T₅ group (Rs.18.20). This finding is in agreement with that obtained by Abd-Elsamee (2001) [1] who found that adding skim milk powder to broiler diet improved economical efficiency. These results were similar to the finding of Memon *et al.* (2005) [8] and Abro *et al.* (2012) [2], who reported that protein supplemented diet in broilers potentially offer a useful diet for cost reduction alternative.

Table 1: Body weight and Cumulative feed consumption of broilers at 6 weeks of age as influenced by dietary supplementation of skim milk powder

Treatment groups	Body weight (g)	Cumulative feed consumption(g)
T ₁ - Basal diet (Control)	1778.1 ^d ± 69.2	3143.4 ^{ab} ± 15.6
T ₂ - Basal diet + (0.25 per cent skim milk powder)	1938.7 ^{ab} ± 73.1	3149.9 ^a ± 26.5
T ₃ - Basal diet + (0.50 per cent skim milk powder)	1923.2 ^{abc} ± 24.5	3107.9 ^{acd} ± 33.5
T ₄ - Basal diet + (0.75 per cent skim milk powder)	1955.4 ^a ± 53.3	3123.5 ^{abc} ± 30.9
T ₅ - Basal diet + (1.0 per cent skim milk powder)	1904.1 ^{abc} ± 50.8	3103.8 ^{cd} ± 37.9

Value given in each cell is the mean of 40 observations

^{a-d} Means within a column with no common superscript differ significantly ($P < 0.05$)

Table 2: Cost effectiveness of broilers reared up to 6 weeks of age as influenced by dietary supplementation of skim milk powder

Treatment groups	Body weight (g)	Total feed consumed (kg)			Cost of feed per kg (Rs)			Total feed cost per bird (Rs)	Total cost of production per kg live weight (Rs)	Total income per bird (Rs)	Net profit per kg live weight (Rs)	Net profit per bird (Rs)
		Pre starter	Starter	Finisher	Pre starter	Starter	Finisher					
T ₁ - Basal diet	1778.1	0.310	1.143	1.690	33.0	34	35	108.24	66.50	151.14	18.50	32.90
T ₂ - Basal diet + (0.25 per cent skim milk powder)	1938.7	0.324	1.146	1.679	33.0	34.8	36.8	112.36	63.31	164.28	21.69	41.92
T ₃ - Basal diet + (0.50 per cent skim milk powder)	1923.2	0.329	1.177	1.601	33.0	35.6	37.8	113.28	64.10	163.47	20.90	40.20
T ₄ - Basal diet + (0.75 per cent skim milk powder)	1955.4	0.348	1.181	1.594	33.0	36.4	38.4	115.68	64.27	166.21	20.72	40.53
T ₅ - Basal diet + (1.0 per cent skim milk powder)	1904.1	0.330	1.200	1.573	33.0	37.2	39.2	117.19	66.80	161.84	18.20	34.65

Miscellaneous cost: Rs 10/bird

Price of one kg live weight of broiler: 85/kg



Fig 1: Skim milk powder

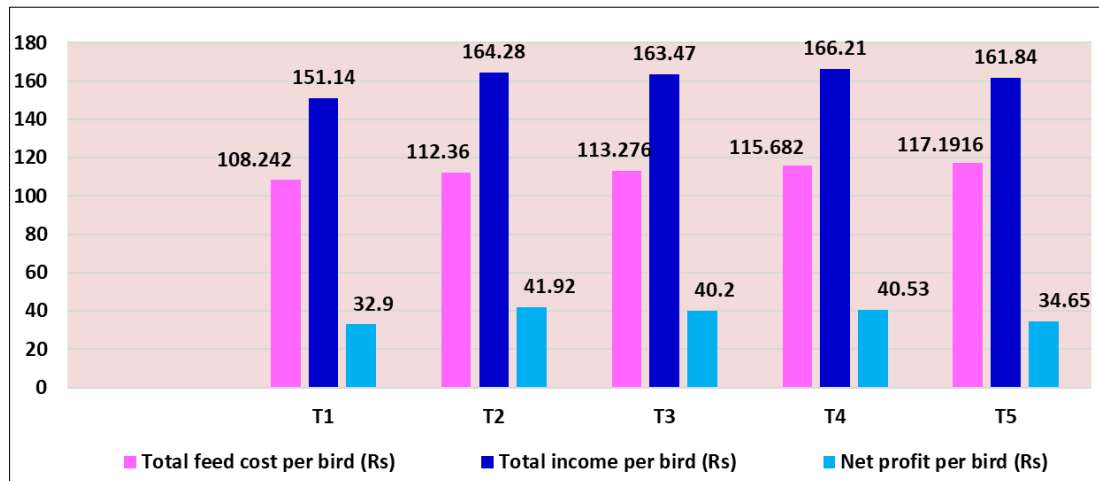


Fig 2: Total feed cost (Rs), Total income (Rs) and Net profit (Rs) per broiler as influenced by dietary supplementation of skim milk powder

Conclusions

Based upon this study, it is concluded that supplementation of skim milk powder in broiler basal diet at the level of 0.25 per cent (T₂ group) increased net profit per kg live weight and net profit per bird in a cost effective way.

Acknowledgement

The authors are thankful to the Dean, Veterinary College and Research Institute, Salem for providing facilities and financial grant to carry out this research project.

References

1. Abd-Elsamee MO. Broiler performance as affected by crude protein, lysine and a probiotic. *Egypt. Poult. Sci.* 2001;21: 943-962.
2. Abro MR, Sahitoz HA, Memon A, Soomro RN, Soomro H and Ujjan NA. Effect of various protein source feed ingredients on the growth performance of broiler. *International Journal of Medicinal Plant Research.* 2012;1(4):038-044.
3. Apata DF. Growth performance, nutrient digestibility and immune response of broiler chicks fed diets supplemented with a culture of *Lactobacillus bulgaricus*. *J. Sci. Food and Agri.* 2008;88:1253-1258.
4. Kamran Z, Mirza AM, Ahsan UH, Mahmood S. Effect of decreasing dietary protein levels with optimal amino acid profile on the performance of broilers. *Pakistan Vet. J.* 2004;24(4):165-168.
5. Kermanshahi H, Rostami H. Influence of supplemental dried whey on broiler performance and cecal flora. *Inter. J. of Poul. Sci.* 2006;5(6):538-543.
6. Mansoub NH. Comparison of effects of using yogurt and probiotic on performance and serum composition of broiler chickens. *Annals of Biological Research.* 2011;2(3):121-125.
7. Mahmmod ZA, Abdulrazaq HS, Salem, AS, Sideq RM. Effects of supplementation probiotic and dried yogurt powder on growth performance, carcass characteristics, intestinal micro flora and immunity of broiler chickens. *Zanco J. Pure Appl. Sci.* 2014;26(3):35-42.
8. Memon A, Ansari NN, Solangi AA, Memon G. Effect of blood meal on the growth and carcass yield of broilers. *Pak. Vet. J.* 2005;1(3):105-107.
9. Mysaa A, Motasem M. Effect of milk powder supplementation on growth performance of broilers. *Journal of agricultural science.* 2015;7(8).
10. NRC. Nutritional requirement of poultry. National Research Council. 9th Edn. National Academy Press, DC, 1994.
11. Omara II. Nutritive value of skimmed milk and whey, added as natural probiotics in broiler diets. *Egyptian J. Anim. Prod.* 2012;49(2):207-217.
12. Snedecor GW, Cochran WG. Statistical methods. 8th ed., Iowa State University Press/Ames, Iowa - 50010, 1989.