

## Effect of Supplementation of Probiotic and Enzymes on Performance of Japanese Quails

M. J. Chimote\*, B. S. Barmase<sup>1</sup>, A. S. Raut<sup>2</sup>, A. P. Dhok<sup>3</sup> and S. V. Kuralkar<sup>4</sup>

Department of Poultry Science,  
Post Graduate Institute of Veterinary and Animal Science, Akola – 444104  
Corresponding author email : drmeena\_chimote@rediffmail.com

### Abstract

The present study was carried out for six weeks on 135 day old quail chicks to study the effect of supplementation of probiotic and enzymes on growth performance. The dietary treatments comprised of T<sub>1</sub> – control i.e. corn – soya based diet as control, whereas T<sub>2</sub> and T<sub>3</sub> supplemented with probiotic and multienzyme respectively. The body weight gain and feed conversion efficiency was significantly (P<0.01) better in probiotic and enzyme fed groups. Similarly dressing percentage was also significantly (P<0.01) better in these groups as compared to control. It is concluded that probiotic and enzyme can be successfully incorporated in diet of Japanese quail as a growth promoter.

**Keywords:** Supplementation, Probiotic, Enzyme, Performance, Japanese Quail, Diet.

### Introduction

The meat type quail rearing is common practice to bridge a gap between present demand and supply of animal protein. The efficiency of broiler quails to convert the feed into meat, play a key role in economics of broiler industry. There fore, it is highly essential to improve feed efficiency of quails to produce meat economically, for this it is essential to add feed additives such as probiotic and enzymes to aim to improve digestibility and bioavailability of nutrients.

Probiotic is a live microbial feed supplement which beneficially affects the host by improving its intestinal microbial balance (Fuller, 1989): Enzymes are involved in all anabolic and catabolic pathways of digestion and metabolism which helps in improved FCR (Mujeeb Ather, 2001): In view of this, it was considered worth wide to undertake a study to evaluate the effect of probiotic and enzymes on growth performance of quails.

### Materials and Methods

One hundred and thirty five day old quail chicks were randomly divided into three treatment groups comprising three replications and fifteen chicks in each. The dietary treatments were comprising of T<sub>1</sub> control diet with corn-soya based and T<sub>2</sub> supplemented with T<sub>1</sub> + Probiotic starter @100 gm / ton of feed, finisher @ 50 gm / ton of feed and T<sub>3</sub> with enzymes @ 350 gm/

ton of feed. Diets were prepared as per ICAR standards (Panda *et al.*, 2002): The chemical analysis of experimental diets was carried out as per AOAC (1990) which is presented in Table 1. The data collected during the study and analyzed as per "Snedecor and Cochran (1994) by using, "Factorial and Completely Randomized Design" (FCRD).

### Results and Discussion

Supplementation of probiotic and enzymes revealed significant (P<0.01) improvement in live body weights and weight gain as compared to control (Table 2): Significantly higher growth in probiotic group may be attributed to inhibition of growth of the enteropathogens in the gut by decreasing the intestinal P<sup>H</sup> and efficient utilization of nutrients by the beneficial microbes. Asmita Kumari *et al* (2001) and Kumaraj *et al* (1997) reported significant increase in body weight in quails. Straznicka (1992), Wantia (1993) and Edwin *et al* (2004), reported improved live weight due to multienzymes in diet. The feed consumption was significantly lower in probiotic fed groups and comparable with enzymes group, might be due to better utilization of nutrients. Pakhira and Samanta (2006) and Asmita Kumari *et al* (2001) reported lower feed intake on lactobacillus in diet of quails. It is also observed that quail receiving the diet with probiotic and enzymes revealed significantly (P< 0.05) better feed conversion efficiency as compared to control. These findings are in accordance with Asmita Kumari

\* Part of M. V. Sc. Thesis of first author submitted to MAFSU, Nagpur – 6

1. Professor & Head      2. M. V. Sc., Scholar      3. Technical Officer, MAFSU, Nagpur  
4. Associate Professor, Dept. of Animal Genetics and Breeding

*et al* (2001) and Elongvan *et al* (2004) who also reported better FCR on feeding of probiotic and enzymes in quails. The dressing percentage was also better in probiotic and enzyme supplemented diet and collaborates with Rathi (2003) and Kumar *et al* (2005) who observed increased dressing percentage by inclusion of probiotic and multienzymes. Similarly nitrogen retention was also maximum in probiotic and enzymes group comprising to control and accordance with Rathi (2003) also revealed higher N<sub>2</sub> retention on probiotic and enzymes fed groups.

It is concluded that probiotic and enzymes can be successfully incorporated in diet of Japanese quails a growth promoters.

References

1. A. O. A. C. (1990): Official Method of Analysis, 15<sup>th</sup> ed, Washington D. C. : 945.
2. Asmita Kumari, S. S. Singh, M. D. Neeruddin and K. C. P. Singh (2001): *Indian J. Poult. Sci.*, 36 (2) : 233-234.
3. Edwin, S. C., K. Vishwanathan, B. Mohan and M. R. Purushottaman (2004): *Indian J. Poult. Sci.*, 39 (3) : 241-245.
4. S. Elangovan, A. V., A. S. Mandal, P. K. Tyagi, P.K. Tyagi, Tappo and T. S. Johari (2004): *J. Sci. Food and Agri.*, 84 (15) : 2028-2034.
5. Fuller, R. (1989): *J. Appl. Bacteriol.*, 66:305-378.
6. Kumar, R., P. K. Tyagi, A. V. Elangovan, A. K. Shrivastav, P. K. Tyagi, V. R. B. Shastry (2005): XXIII IPSACON, Hyderabad, Vol. II
7. Kumarraj, R., D. Narhari, G. Shrinivasan & R. A. Rajani (1997): *Indian J. Poult. Sci.*, 32: (1) : 106-107.
8. Mujeeb Ather, M. A. (2001): *Poult. Line*. 5 : 16-20.
9. Pakhira, M. C. and G. Samantha (2006): *Indian J. Poult. Sci.*, 41 (1) :68-73.
10. Panda, B., V. R. Reddy, V. R. Sadagopan & A. K. Shrivastav (2002): ICAR Pub., New Delhi.
11. Rathi, A. (2003): M. V. Sc., Thesis, MAFSU, Nagpur
12. Staznicka, H. (1992): *Zivocisna Vyroba*, 37: 61-68.
13. Snedecor, G. W. and Cochran (1994): 8<sup>th</sup> edn. Oxford and IBH. Pub. Co. Calcutta.
14. Wantia, D. (1993): *Zivocisna Vyroba*, 39 (2) : 983-992.

Table-1. Percent composition of experimental diets

Sr. No.	Feed Ingredients	Starter (0-3 weeks)	Finisher (0-4 weeks)
1	Maize, yellow	43.00	52.00
2	Soyabean meal, DOC	52.50	44.00
3	Dicalcium Phosphate	1.45	1.50
4	Limestone Powder	1.50	1.75
5	Minerals and Feed Supplement	0.30	0.30
6	Vitamin Premix	0.15	0.15
7	Vegetable Oil	0.50	—
8	CP (%)	26.95	24.04
9	M.E. Kcal / Kg (Calculated)	2740	2785

Table-2. Performance of Japanese Quails on Probiotic and Enzymes supplementation

Groups	Initial body weights (gms)	Final body weights (gms)	Weekly body weights gain** (gms)	Total feed Consumption** (gms)	Feed Conversion Ratio**	Dressing Percentage*	N <sub>2</sub> Retention (%)
T <sub>1</sub> Control	8.84± 0.20	221.68 <sup>a</sup> ±2.72	35.45 <sup>a</sup> ± 3.07	121.95 <sup>b</sup> ±20.53	3.32 <sup>a</sup> ±0.14	69.06 <sup>a</sup> ±0.66	59.00
T <sub>2</sub> Probiotic	9.04± 0.23	243.46 <sup>b</sup> ± 2.97	39.26 <sup>b</sup> ±4.34	117.44 <sup>a</sup> ± 19.73	2.83 <sup>b</sup> ± 0.10	75.16 <sup>b</sup> ±1.42	67.24
T <sub>3</sub> Enzyme	9.26± 0.22	234.37 <sup>b</sup> ±4.66	38.63 <sup>b</sup> ±4.07	120.47 <sup>ab</sup> ±19.82	2.97 <sup>b</sup> ± 0.10	74.15 <sup>b</sup> ± 0.81	64.91

a, b, c mean values having different superscript in column differ significantly,

\*\* - (P<0.01) and \* - (P<0.05)

\*\*\*\*\*