

## Effect of Various Probiotics on Growth Performance of Japanese Quails

P.E. Taksande, A.A. Zanzad, B.N. Ramteke, R.D. Lanjewar\*, P.R. Sirsat and R.B. Patankar

Department of Animal Nutrition  
Nagpur Veterinary College, Maharashtra Animal and Fishery Sciences University Nagpur –6  
\* Corresponding author

### Abstract

An experiment was conducted to study the effect of various probiotics on the performance of Japanese Quails. One hundred Japanese quail chicks were weighed individually and they were uniformly distributed equally to four dietary treatments consisting 25 birds in each. The starter and finisher diets were containing ME 2800 and 2600 Kcal/kg and protein 25 and 23 % respectively. The group T<sub>0</sub> (Control) fed standard quail diet and T<sub>1</sub>, T<sub>2</sub> and T<sub>3</sub> were fed probiotic *Saccharomyces cerevisiae*, *Lactobacillus sporogenes* and *Saccharomyces boulardii* @ 0.05 % in diet. The study was conducted for six weeks in the same managemental condition. Weekly live body weight and feed consumption were recorded. The group supplemented with *Saccharomyces cerevisiae* resulted in significantly higher growth rate and showed higher weight gain. The average feed efficiency and nitrogen retention were significantly higher in group supplemented with *Saccharomyces cerevisiae*. The cost of production /100gm of meat was found to be Rs.7.10, 6.84, 7.55 and 8.37 respectively in T<sub>0</sub> to T<sub>3</sub> groups. Thus, the study indicated that supplementation of *Saccharomyces cerevisiae* in the diet of Japanese quails was effective in improving performance of the quails.

**Keywords:** Japanese quails, Probiotic, Growth performance.

### Introduction

A worldwide public pressure is being exerted on the poultry industry to reduce or eliminate the prophylactic use of antibiotic for enhancing birds performance. Stress due to intensive production conditions to enhance the birds performance, create an imbalance of intestinal microflora and also lowers the body defense mechanism. Development of a desirable and stable gastrointestinal microflora is essential for the health and production of poultry meat. Now a days various growth promoters are being used including probiotics which have helped to improve diet, microbial balance and growth rate of birds.

Probiotics sources such as bacterial *Sporolac* (*Lactobacillus sporogenes*) and fungal (yeast) origin were added alone or in combination with standard quail ration reported to increase significantly in live body weight gain [Mahajan *et al.* (1999)]. Kumari *et al.* (2001) advocated supplementation of probiotic of bacterial origin whereas Gohain and Sapota, (1998) found *Saccharomyces cerevisiae* promising to increase growth performance. Hence the present investigation was planned in quails to study the effect of various probiotics on growth performance of Japanese quails.

### Materials and Methods

One hundred Japanese quail chicks were randomly distributed equally to four dietary treatments consisting 25 birds each. Two diets were prepared consisting ME 2800 and 2600 kcal/kg with protein 25 and 23 per cent in starter and finisher diet respectively. Group T<sub>0</sub> served control receiving standard quail diet. The experimental groups were as follows.

#### Gr. Diet Regimen

- T<sub>0</sub> Conventional mash
- T<sub>1</sub> T<sub>0</sub> + *Saccharomyces cerevisiae* (0.05 %)
- T<sub>2</sub> T<sub>0</sub> + *Lactobacillus sporogenes* (0.05 %)
- T<sub>3</sub> T<sub>0</sub> + *Saccharomyces boulardii* (0.05 %)

The study was conducted for six weeks in the same managemental condition. The chicks were maintained on deep litter system of housing with *adlibitum* feed and water. Individual body weight and feed intake were recorded at weekly interval. Metabolic trial was conducted at the end of six week. Three birds were selected from each group and sacrificed for carcass evaluation at end of six weeks. The data pertaining to various parameters were analyzed using completely randomized design (Snedecor and Cochran, 1968).

Results and Discussion

The micro climatic data indicated that the average maximum and minimum temperature during experimental period were 46.1±0.35°C and 40.4±0.55°C respectively.

The supplementation of probiotics showed significant improvement in average live body weight of quails in the group T<sub>1</sub> supplemented with *Saccharomyces cerevisiae* @ 0.05 % . This may be due to beneficial microorganisms which produce enzymes enhancing the digestive ability of the host. Digestive upsets are common at times of stress.

Kumararaj *et al.* (1997) observed improved live body weight in quails due to supplementation of commercial probiotics. However Yalcin *et al.* (2000) found no significant difference in terms of live body weight in quails of different treatment groups fed with probiotics.

The average feed efficiency were numerically higher in group supplemented with *Sacchromyces cerevisiae* similar findings were reported by Kumari *et al.*(2001). However Panda *et al.* (1999) reported non significant effect on FCR of quails receiving probiotics.

The average dressing percentage was highest in the treatment group fed with *Saccharomyces cerevisiae*. The present findings are in agreement with Bandy and Risam (2001) whereas Sarkar *et al.* (1997) reported non significant effect on carcass quality.

The average nitrogen retention was also found to be superior in group supplemented with *Saccharomyces cerevisiae*. The economics of various probiotics feeding in quails indicated that group receiving *Saccharomyces cerevisiae* reduced the cost of production per 100 g of meat. Kumari *et al.* (2001) also reported cost effective feeding with probiotics.

Thus, the study indicated that supplementation of 0.05% *Saccharomyces cerevisiae* in the diet of Japanese quails was effective in improving performance of the quails.

References

1. Bandy, M.T. and Risam K.S. (2001): Growth performance and carcass characteristics of broiler chickens fed with probiotics. *Indian J. Poult. Sci.*,36(3):252-255.
2. Gohain, A.K. and Sapkota, D. (1998): Effect of probiotics feeding on the performance of broilers. *Indian J. Poult. Sci.*,33 (1):101-105.
3. Kumararaj ,R.; D. Narhari; G. Srinivasan and R. A. Rajini (1997): Growth performance and carcass characteristics of Japanese Quails supplemented with probiotics. *Indian J. Poult. Sci.*,32 (1):106-107.
4. Kumari, A.; Singh, S.S.; Neeruddin, M.D. and Singh, K.C.P. (2001): Effect of probiotics on growth performance of meat type Japanese quails. *Indian J. Poult. Sci.*,36(2):233-234.
5. Mahajan,P.;Saho,J. and Panda,P.C.(1999): Effect of probiotics feeding and seasons on growth perfprmance and carcass quality of broilers. *Indian J. Poult. Sci.*,34 (2):167-176.
6. Panda ,A.K.; Ramarao, S. V.; Reddy, M. R. and Prharaj, N. K.(1999): Effect of dietary inclusion of probiotic on growth, carcass traits and immune response in broilers. *Indian J. Poult. Sci.*,34 (3):343-346
7. Snedecor, G. W. and Cochran, W. E. (1968): Statistical methods, 6<sup>th</sup> edn. Oxford and IBH Publishing Co. New Delhi.
8. Sarkar, S., L. Mandal and G. C. Banerjee (1997): Effect of feeding yeast and antibiotic on the performance of broilers. *Indian J. Poult. Sci.*,32 (2):126-131.
9. Yalcin, S.; A.G. Onol, A. Sehu and I. Onbasilar (2000): The use of enzymes, probiotics and antibiotics in quail fattening. Ankara University, *Veterirenier Faculteri Dergisi.*, 47(3): 351-360.

Table-1. Overall performance of quails of different groups

Parameters	T0	T1	T2	T3	Pooled SE
Final Live body weight (g)	141.4 <sup>a</sup>	147.0 <sup>bc</sup>	133.2 <sup>a</sup>	145.0 <sup>ab</sup>	1.51
Gain in Body Weight (g)	134.6	140.04	126.36	137.96	1.27
Feed intake (g) / bird	532.97 <sup>a</sup>	524.4 <sup>a</sup>	713.4 <sup>b</sup>	572.16 <sup>a</sup>	6.3
FCR	4.22 <sup>a</sup>	4.03 <sup>a</sup>	5.65 <sup>b</sup>	4.14 <sup>a</sup>	0.05
Dressing %	71.3	76.35	68.23	74.62	-
N <sub>2</sub> retained %	64.61	68.75	55.0	68.0	-
Feed cost/ Kg	9.00	9.07	9.1	12.6	-
Net Production cost per bird	10.01	10.05	10.06	12.13	-
Cost of production/100 g of meat	7.10	6.84	7.55	8.37	-

(Figures with different superscript in row differ significantly)

\*\*\*\*\*