The Pharma Innovation Journal 2022; SP-11(3): 525-527

www.ThePharmaJournal.com

The Pharma Innovation

ISSN (E): 2277- 7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2022; SP-11(3): 525-527

www.thepharmajournal.com
Received: 19-01-2022
Accepted: 23-02-2022

Dr. Nirmala Minj
Assistant Professor Cum Junior Scientist, Department of Livestock Production and Management, R.V.C, Kanke, Jharkhand, India

Dr. Manmohan Kumar
Department of Animal Husbandry, TVO, Rupauli, Patna, Bihar, India

Dr. Sushil Prasad
University Professor, Department of Livestock Production and Management, R.V.C, Kanke, Jharkhand, India

Dr. Sweta Kumari
Teaching Associate, Department of Microbiology, R.V.C, Kanke, Jharkhand, India

Dr. Rajesh Kumar
Ph.D. Scholar, Department of Livestock Products Technology, Bihar Vetarinary College, Patna, Bihar, India

Dr. Taufique Ahmed
Teaching Associate, Department of Veterinary Anatomy, R.V.C, Kanke, Jharkhand, India

Dr. Himanshu Kumar Himkar
Research Associate, Ranchi Veterinary College, Kanke, Jharkhand, India

Corresponding Author
Dr. Nirmala Minj
Assistant Professor Cum Junior Scientist, Department of Livestock Production and Management, R.V.C, Kanke, Jharkhand, India

Effect of feeding *Moringa oleifera* leaf powder on reproductive traits and egg quality parameters of Japanese quail under cage system of management

Dr. Nirmala Minj, Dr. Manmohan Kumar, Dr. Sushil Prasad, Dr. Sweta Kumari, Dr. Rajesh Kumar, Dr. Taufique Ahmed and Dr. Himanshu Kumar Himkar

Abstract
The current study used four different concentrations of *Moringa oleifera* leaf powder (0 percent, 1.5 percent, 3 percent, and 4.5 percent) by weight basis in feed to analyse the reproductive characteristics and egg quality parameters of Japanese quail. A total of 108 (one hundred eight) 0 day old Japanese quail were obtained and randomly separated into four experimental groups following a two-week brooding period. For a period of up to 12 weeks, they were fed several combinations of feed. According to the findings of the aforementioned study, Japanese quail fed diets containing *Moringa oleifera* leaf powder (MOLP) have considerably improved reproductive characteristics and egg quality measures when compared to Japanese quail fed a control diet (0 percent MOLP).

Keywords: *Moringa oleifera* leaf powder (MOLP), Japanese quail, reproductive traits and egg quality parameters

Introduction
The Japanese quail (*Coturnix coturnix* japonica) was initially introduced to India in 1974 as a new poultry species at the Central Avian Research Institute in Izatnagar, Bareilly, by California University (U.P). In Hindi, quail is referred as 'Bater.' Quail is the most efficient biological machine for transforming feed into high-value animal protein, making it the cheapest animal protein source for human diets. In many disadvantaged places of the world, Japanese quails provide as a good source of food and animal protein (Chaturvedi, 1973) [1]. Many Asian countries are deficient in animal protein, which can be found in milk, meat, fish, eggs, and poultry.
Japanese quail produce is nutrient-dense and delectable, necessitating special care in current scientific quail farming. Commercial quail farming is gaining popularity in India these days, owing to the low investment and maintenance costs compared to other birds.
Moringa oleifera is the most efficient herbal plant because its leaves contain a larger amount of protein, in addition to its numerous therapeutic and medical benefits. Moringa is the only genus in the Moringaceae family of flowering plants. Munga or Sahjan are the local names for it. The drumstick tree (Makker and Becker, 1997) [2] is an example of such a plant.
The leaves of the trees have been shown to exhibit antioxidant activity due to greater polyphenol content (Mayo *et al.*, 2012) [3] and are a good source of vitamins. Its leaf meal could be an excellent natural antioxidant source for broiler meat. Due to its main component, pterygospermin, it has antibacterial properties as well. *Moringa oleifera* has several medicinal applications. The Moringa tree's pantropical culture and ease of multiplication warrant more rigorous investigation into its biological and economic potential, particularly as a source of feed components and medication.

Materials and Techniques
The current research was carried out at Ranchi Veterinary College's Avian Research Development Centre, Department of Livestock Production and Management.

The experimental birds and design
A total of 108 day old unsexed Japanese quail with roughly comparable body weights were acquired and divided into four treatment groups (T0, T1, T2, T3), each with 27 chicks and three replicates of 9 chicks.

From 0 to 6 weeks of age, all the birds were fed isocaloric and isonitrogenous diets containing approximately 24 percent CP and 20 percent CP respectively (0 to 6th weeks of age). MOLP was not used in the control diet (T0), but it was used in groups T1, T2, and T3 at rates of 1.5, 3.0, and 4.5 percent by weight, respectively, to replace soyabean oil cake with similar qualities. The food was given out twice a day, between 8.30 a.m. and 5 p.m. There was no restriction on the amount of water that might be consumed. In the cage system of management, space was allocated as required.

Following the beginning of laying, three sets of eggs were gathered (i.e. total hatching of eggs were account for this study)

Data obtained after experiment were analyzed as per the standard statistical methods described by Snedecor and Cochran (2004) [4], applying one way ANOVA by using IBM SPSS (Statistical Package for the Social Sciences) statistics software.

Result and Discussion

Table 1 shows the average values of reproductive parameters such as fertility %, hatchability percentage on total egg set (TES), and hatchability percentage on fertile egg set (FES) of eggs from Japanese quails grown with or without MOLP under cage management.

Under cage system of management the effect of MOLP on fertility % of quails egg was found to be non –significant, the average value of fertility were 73.68±3.48, 80.93±3.46, 82.18±0.31, 75.23±5.29% for T0,T1,T2 andT3 treatment groups respectively. Hatchability % on Total egg set (TES) and fertile egg set (FES) basis were also observed to be differ non –significantly. The mean value pertaining to above parameters were found to be 58.97±5.08, 64.08±6.35, 69.34±4.99, 62.84±7.41%and 77.35±4.45, 76.79±5.22, 81.10±5.03, 80.55±5.68% for T0,T1,T2 andT3 treatment groups respectively

The findings of this study are consistent with those of Kloub *et al*. (2006) [5], who found that the feed addition improved hatchability in Japanese quails when compared to other dietary regimens.

Table 2 shows the mean values of egg quality traits such as egg weight (g), egg length (mm), egg width (mm), and shape index, albumin height (mm), albumin width (mm), albumin index, yolk height (mm), yolk width (mm), and shell thickness (mm) of Japanese quails raised with or without MOLP under cage management.

Except for the shape index, the mean value of all egg quality measures differed non-significantly under the cage management technique. The average shape index values for T0, T1, T2, and T3 treatment groups were 81.13.050, 83.220.65, 80.270.78, and 83.900.67, respectively. The birds reared in the T3 therapy group had the greatest average shape index.

Mellau (1999) [6] observed a rise in egg weight values with an increase in *Leucena leucocephala* leaf meal, which was in agreement with the results of the above experiment (LLM). Bhatnagar *et al*. (1996) [7] found no significant influence on egg weights at the 0%, 5%, and 10% inclusion levels, however the lowest egg weight was at the 20% inclusion level.

Table 1: Effect of Molp on hatchability parameters of quail eggs under cage system of management

Parameters	T0	T1	T2	T3	F value
Total egg set	180	151	170	182	
Fertile eggs	134	126	146	141	
Chicks hatched	104	102	119	117	
Fertility %	73.68±3.48	80.93±3.46	82.18±0.31	75.23±5.29	1.336 ^{NS}
Hatchability % (tes)	58.97±5.08	64.08±6.35	69.34±4.99	62.84±7.41	0.501 ^{NS}
Hatchability % (fes)	77.35±4.45	76.79±5.22	81.10±5.03	80.55±5.68	0.183 ^{NS}

Table 2: Effect of molp on egg quality parameters of japanese quail under cage system of management

Parameter/treatment	T0	T1	T2	T3	F value
Egg Weight	10.00±0.41	10.50±0.65	11.00±0.41	11.00±0.41	1.000^{NS}
Egg Length(mm)	28.63±0.50	29.16±0.33	29.80±0.41	27.39±1.27	1.944^{NS}
Egg Width(mm)	23.53±0.34	24.21±0.49	23.93±0.55	25.34±1.33	0.990^{NS}
Shape Index	81.13±.050^{b}	83.22±0.65^{c}	80.27±0.78^{a}	83.90±0.67^{c}	6.729*
Albumin Height(mm)	4.28±0.28	4.44±0.23	4.41±0.24	4.07±0.46	0.293^{NS}
Albumin Width(mm)	38.02±1.50	37.15±1.60	38.53±2.96	38.37±4.37	0.047^{NS}
ALBUMIN INDEX	0.11±0.01	0.13±0.01	0.12±0.01	0.12±0.02	0.160^{NS}
Yolk Height(mm)	11.52±0.67	12.29±0.26	10.46±0.27	10.57±0.92	2.086^{NS}
Yolk Width(mm)	26.98±0.50	26.42±0.51	26.38±0.62	27.83±2.12	0.342^{NS}
Shell thickness (mm)	0.180±0.001	0.176±0.002	0.177±0.002	0.178±0.004	0.110^{NS}

Table 3: Chemical composition of *Moringa oleifera* leaf powder (MOLP)

Constituents	Amount (per 100g)
Moisture	9
Protein	28.65
Lipid	7.09
Ash	10.9
Carbohydrate	44.36
Calcium(mg)	2.97
Magnesium(mg)	1.9
Zinc	1.58

Table 4: Starter and grower ration (0 to 6 weeks of age)

Ingredients	Control ration (cp%=24.81)	Treatment ration 1 (cp%=24.53)	Treatment ration 2 (cp%= 24.25)	Treatment ration 3 (cp%=24.41)
Yellow maize (%)	48	48	48	48
Soyabean cake (%)	32	30.50	29	27.50
Wheat bran (%)	6.50	6.50	6.50	6.50
Fish meal (%)	11	11	11	11
MOLP (%)	0	1.5	3	4.5
Min. mix (%)	2	2	2	2
Salt (%)	0.50	0.50	0.50	0.50

Table 5: Layer ration ration (6 Weeks onwards up to Experimental Period)

Ingredients	Control ration (cp%=20.95)	Treatment ration 1 (cp%=20.67)	Treatment ration 2 (cp%=20.40)	Treatment ration 3 (cp%=20.12)
Yellow maize (%)	54.50	54.50	54.50	54.50
Soyabean cake (%)	25	23.50	22	20.50
Wheat bran (%)	5.50	5.50	5.50	5.50
Fish meal (%)	8.50	8.50	8.50	8.50
MOLP (%)	0	1.5	3	4.5
Oyster shell grit	4	4	4	4
Min. mix (%)	2	2	2	2
Salt (%)	0.50	0.50	0.50	0.50

Conclusion

Based on the findings, it can be concluded that including *Moringa oleifera* leaf powder (MOLP) in the quail's diet at levels of 1.5 percent to 3 percent increased reproductive characteristics and egg quality metrics when compared to the control diet.

References

1. Chaturvedi DK. Japanese quail – its management and nutrition. Indian Poult. Gazzette. 1973;57(4):97-101.
2. Makkar Becker. Nutritional value and antinutritional components of whole and ethanol extracted *Moringa oleifera* leaves. Animal feed science technology. 1996;63:211-228.
3. Moyo B, Oyedemi S, Masika PJ, Muchenje V. Polyphenolic content and antioxidant properties of *Moringa oleifera* leaf meal extracts and enzymatic activity of liver from goats supplemented with *Moringa oleifera*/Sunflower cake. Meat Sci. 2012;02:29.
4. Snedecor GW, Chochran WG. Statistical method, 8th Edn Lowa State University, press USA. Oxford and IBH Publication New Delhi, 8th Edn. 1994, 591.
5. Kloub KE, Mostafu ME, Mageed NAAA. Effect of dietary levels of Ca and vit D3 and their interactions on the performance of Japanese quail chicks. Egypt Polut. Sci. 2006;26(3):767-989.
6. Mellau NN. The Effect of *Leucaena leucocephala* leaf meal on egg production and quality. Unpublished Dissertation for Award of M.Sc. (Agriculture) Degree at Sokoine University of Agriculture (SUA) Tanzania. 1999, 104.
7. Bhatnagar R, Kataria M, Verna SVS. Effects of dietary Leuceana leaf meal on the performance and egg characteristics in White leghorn Hens. Indian Journal of Animal Science. 1996;66(12):1291-1294.