The Indian Journal of Veterinary Sciences & Biotechnology ***(2018) Volume 14, Issue 2, 49-51***
ISSN (Print) : 2394-0247 : ISSN (Print and online) : 2395-1176, abbreviated as IJVSBT
10.21887/ijvsbt.14.2.11

Comparative evaluation of Egg Quality Parameters of Kadaknath and Vanaraja Chicken in Intensive Farming System

S. S. Pathak*, U. Tamuli[1], S. Khargharia[2], G. Bordoloi[3], L. S. Khuman[4], P. Chabukdahara[5], A. Gogoi[6], P. Rajbongshi[7], K. Saikia[8], K. Boruah[9s]

[1,4] Department of Veterinary Extension Education,[2] Veterinary Pharmacology & Toxicology,[3] Veterinary Parasitology, [5] Veterinary Physiology & Biochemistry,[6] Veterinary Animal Genetics & Breeding, [7] Livestock Farm Complex, [8,9] Livestock Production Management,
Lakhimpur College of Veterinary Science, AAU, Joyhing, Lakhimpur-787051, India

Publication Info

Article history:

Received : 09-07-2018
Accepted : 29-08-2018
Published : 17-10-2018

Key Words:

Kadaknath, Vanaraja, chickens, egg quality, deep litter

Corresponding author:

siddharthapathak83@gmail.com

Abstract

In the present study , a total of 60 eggs were assessed for egg quality parameters of Kadaknath and Vanaraja chicken reared under deep litter farming system . All chickens were provided uniform diet of Chick (0-8 weeks), Grower (9-20 weeks) and Layer (above 20 weeks) ration. Except for the shape index, the internal egg quality parameters were significantly ($P \leq 0.05$) higher in Vanaraja eggs as compared to Kadaknath. Results revealed that the quality of egg of Vanaraja chicken was found to be better as compared to Kadaknath chicken.

Introduction

Next to the cow milk egg is the only animal origin balanced food which is consumed and relished by majority of the population of the world (Baishya *et al.*, 2008). In India, Per capita availability of eggs is only 69 while Indian Council of Medical Research recommendation is 182 (Amandeep Singh, 2018). The Kadaknath breed, also known as Kalamashi in Hindi, is known for its black-coloured meat. It is native of Jhabua and Dhar districts in the western region of Madhya Pradesh and in adjoining areas of Gujarat and Rajasthan states (Valavan *et al.*, 2016). The meat is known for its medicinal characteristics, fetching a higher demand among the consumers. Vanaraja, a dual purpose variety developed by Directorate of Poultry research, Hyderabad, India is highly popular among the rural people of Assam as one of the income generating source especially for the rural women. The success of poultry farming largely depends on the total number of good quality eggs

produced especially in layers and dual purpose birds (Niranjan *et al*., 2008). The evaluation of external and internal quality of the egg is helpful to the consumers. Hence an attempt was made to compare the egg quality of Kadaknath and Vanaraja reared in intensive system of management.

Materials and Methods

The present study was conducted on the Poultry farm maintained at the Department of Livestock Farm Complex, Lakhimpur College of Veterinary Science, Assam Agricultural University. Thirty chickens each of Kadaknath and Vanaraja were included in the present study. The experimental chickens were fed uniform diet of Chick (0-8 weeks), Grower (9-20 weeks) and Layer (above 20 weeks) ration as per BIS (1992) throughout the rearing period. The external egg quality parameters observed were egg weights and shape index. The egg quality parameters like shell colour, shell thickness, egg weight, shape index, albumen index, yolk index, yolk weight and albumen weight were estimated as per method described by Singh and Panda (1987). Haugh unit score, a measure of internal quality of egg was also computed (Kondaiah *et al.,* 1983). The values obtained were subjected to statistical analysis (Snedecor and Cochran, 1994).

Results and Discussion

In the present investigation results indicated that most of the studied egg quality parameters *viz* Egg weight, shell thickness, albumen index, Haugh unit, Yolk Index, Yolk weight and Albumen weight are found to be significantly (Pd"0.05) higher in Vanaraja, while, data for shape index is found significantly higher in Kadaknath (Table 1).

The smaller egg size/ weight of the Kadaknath eggs is in agreement with the findings of Mohan *et al*., (2008), who reported that the average egg weight at 21 weeks was 32.50 ± 0.70 g. The higher egg weight in vanaraja chicken might be due to utilization of exotic germplasm for the development of these rural varieties (Sharma *et al.,* 2006). A significantly (Pd"0.05) higher shape index in Kadaknath chicken eggs is in agreement with the reports of Parmar *et al*., (2006) and Valavan *et al*., (2016). The higher shape index

Table 1 Egg quality parameters of Kadaknath and Vanaraja chicken reared in deep litter system of management

Parameters	Kadaknath eggs	Vanaraja eggs
Egg Weight (g)	$36.37^{a} \pm 0.59$	$42.30^{b} \pm 0.87$
Shape index %	$76.819^{b} \pm 0.417$	$69.000^{a} \pm 0.494$
Shell Thickness (mm)	$0.318^{a} \pm 0.005$	$0.382^{b} \pm 0.010$
Albumen Index	$0.079^{a} \pm 0.035$	$0.128^{b} \pm 0.006$
Haugh Unit	$71.910^{a} \pm 0.472$	$74.703^{b} \pm 0.779$
Yolk Index	$0.352^{a} \pm 0.261$	$0.591^{b} \pm 0.004$
Yolk weight (g)	$13.722^{a} \pm 0.161$	$16.750^{b} \pm 0.209$
Albumen weight(g)	$21.823^{a} \pm 0.241$	$25.200^{b} \pm 0.467$

Means having same superscript do not differ significantly (Pd"0.05)

value of indigenous chicken might be due to broad and short size and shape of the eggs (Pathak *et al*., 2015).

The higher shell thickness in the birds developed for backyard poultry keeping was a better indication for their suitability in rural backyard farming (Sinha *et al*., 2017). The indices for Kadaknath chicken is in line with the reports of Valavan *et al*. (2016), this might be attributed to the difference in egg weight which has a positive correlation with the albumen index ([a]ekeroìlu and Altunta, 2009 and Sinha *et al*., 2017) and the influence of genetic group on the yolk index values (Rajkumar *et al*., 2009 and Momoh *et al*., 2010).

Higher egg weight in Vanaraja may be due to higher yolk and albumen weight . Sinha *et al.* (2017) reported that the average albumen and yolk weight increased gradually with the increase in egg weight. The significantly (Pd"0.05) higher Haugh unit values for vanaraja eggs might be attributed to improved quality of the albumen and increase in height of the albumen. Sinha *et al*. (2017) revealed that the albumen height subsequently increases with the increase in egg weight. The Haugh unit for Kadaknath eggs recorded were comparable to the findings of Valavan *et al*. (2016) and Parmar *et al.* (2006). A wide variation in Haugh unit values for Kadaknath birds, ranging from 62.58 to 90.00 for eggs collected under field conditions was recorded by Parmar *et al.,* (2006).

Acknowledgments

The authors are highly thankful to Assam

Agricultural University, Jorhat, Assam for providing the facilities. The author is also thankful to the I/C HOD, Department of Livestock Farm Complex, Lakhimpur College of Veterinary Science, Assam Agricultural University, Joyhing, Lakhimpur-787051, India.

Conflict of Interest

All authors declare no conflict of interest.

References:

Amandeep, Singh. (2018). Current livestock Production and statistics of India. http://www.vetextension.com/current-livestock-animal-husbandry-statistics-india/

Baishya, D., Dutta, K. K., Mahanta, J. D. and Borpujari, R. N. (2008). Studies on Certain Qualities Of Different Sources Of Chicken Eggs. *Tamil Nadu J. Vety., & Anim. Sci*. **4** (4): 139-141.

BIS.1992. Bureau of Indian Standard of poultry feed. Manik Bhawan, Bahadur Shah Zafer Marg, New Delhi.

Kondaiah, N., Panda, B. and Singhal, R. A. (1983). Internal egg quality measure for quail eggs; *Indian J. Anim. Sci.* **53**: 1261-64.

Mohan, J., Sastry, K. V. H., Moudgal, R. P. and Tyagi J. S. (2008). Performance profile of Kadaknath desi hens under normal rearing system. *Int. J. Poult. Sci.* **43**:379–381.

Momoh, O. M., Ani, A.O. and Ugwuowo, L. C. (2010). Part-period egg production and egg quality characteristics of two ecotypes of Nigerian local chicken and their F1 crosses. *Int. J. Poult. Sci.,* **9** (8): 744-748.

Niranjan, M., Sharma, R. P., Rajkumar, U., Chatterjee, R. N., Reddy, B. L. N. and Bhattacharya, T. K. (2008). Egg quality traits in chicken varieties developed for backyard poultry farming in India. *Livest. Res. for Rural Dev*. **20** (12).

Parmar, S. N. S., Thakur, M. S., Tomar, S. S., and Pillai, P. V. A. (2006). Evaluation of egg quality traits in indigenous Kadaknath breed of poultry. *Livest. Res. for Rural Dev.***18** (9).

Pathak, S.S., Barua, N. and Kalita, N. (2015). Comparison of Egg Quality Characteristics of Indigenous and Broiler Parent Line crossed with Indigenous chicken. *Indian J. Vet Sci. Biotech.* **11**(3): 12-16.

Rajkumar, U., Sharma, R.P., Rajaravindira, K. S., Niranjan, M., Reddy, B.L.N., Bhattacharya, T.K. and Chaterjee, R.N. (2009). Effect of genotype and age on egg quality traits in Naked neck chicken in Tropical climate from India. *Int. J. of Poult. Sci*. **8**(12): 1151-1155.

Sekeroglu, A. and Altunta, E. (2009). Effects of egg weight on egg quality characteristics. *J. Sci. Food Agric.* **8**(3): 379-383.

Sharma, R. P., Chatterjee, R. N. and Niranjan, M. (2006). Poultry production under backyard system: Improvement approaches. In: National symposium on conservation and improvement of animal genetic resources under low input system; Challenges and strategies, NBAGR, Karnal. PP 72-77

Singh, R. P. and Panda, B. (1987). Effect of seasons on physical quality and component yields of eggs. *Indian J. Anim. Sci*. **57** : 50-55.

Sinha, B., Mandal, K. G. and Kumar, R. (2017). Effect of Egg Weight on Egg Quality Traits of Laying Hens. *Int. J. Pure App. Biosci*., **5**(3): 293-300.

Snedecor, G. W. and Cochran W. C. (1994). Statistical methods; 8th edition. Iowa state University Press, Ames, Iowa.

Valavan, Ezhil. S. A., Omprakash, V. and Bharatidhasan, A. (2016). Production Performance of Kadaknath in an organized Poultry Farm. *Int. J. Appl. Pure Sci. Agric.*, **02** (11):125-128.

❑