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Productive and Reproductive Performance of Kadaknath Chicken under Semi-intensive System

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A B S T R A C T

The present study was conducted to evaluate the productive performance, reproductive performance and egg quality traits of Kadaknath chicken at TANUVAS Regional Research and Educational Centre, Pudukkottai. The birds were maintained under semi-intensive system. The hen day egg production, hen housed egg production, fertility rate, hatchability on set egg and fertile egg hatchability were 34.34 ± 0.43, 34.24 ± 0.43, 91.11 ± 0.77, 73.89±1.43 and 80.95 ± 1.19, respectively. The egg weight, shell weight, albumin weight, yolk weight were 43.45 ± 2.32, 6.01±0.16, 23.04±1.72 and 14.71±0.57 grams, respectively. The shell thickness, shell percent, albumin percent, yolk percent, shape index percent, albumin index, yolk index and haugh unit were 0.36±0.01mm, 13.83 ± 0.39, 52.37 ± 1.27, 33.80 ± 1.02, 73.64 ± 1.15, 0.11 ±0.01, 0.44±0.01 and 87.28 ± 1.85, respectively.

Introduction

In India most of the landless and poor farmers are involved in backyard poultry rearing. Since poultry rearing involves less investment most of the women and aged people were involved in backyard poultry rearing with native chicken. The village people can able to meet their protein requirement through consumption of chicken meat and eggs. Kadaknath is a popular native chicken breed of India and is a native to Jhabua district of Madhya Pradesh.

This breed is reared in Jhabua and Dhar districts of Madhya Pradesh by the tribal people. Its meat is black in colour. This breed is also known as Kalamashi in Hindi. Kadaknath meat has a high protein and iron contents and also having medicinal value in homeopathy for nervous disorder. The present study was conducted under semi-intensive system at TANUVAS Regional Research and Educational Centre, Pudukkottai with the following objectives includes, to evaluate the productive and reproductive performance Kadaknath chicken and to study the egg quality characteristics of Kadaknath chicken.

Materials and Methods

The present study was conducted at Kadaknath chicken at TANUVAS Regional Research and Educational Centre, Pudukkottai from January to December, 2019. Fifty Kadaknath birds were utilized for the study. The birds were maintained under semi-intensive system. The birds were fed with concentrates and *ad libitum* water. Eggs were collected twice a day at morning and evening. The parameters such as hen day egg production, hen housed egg production, fertility rate, hatchability on set egg and fertile egg hatchability were recorded. The fertility rate, hatchability on set egg and fertile egg hatchability were calculated as follows

$$\text{Fertility rate \%} = \frac{\text{Number of fertile eggs}}{\text{Total number of eggs set for incubation}} \times 100$$

$$\text{Hatchability on set egg \%} = \frac{\text{Number of hatched eggs}}{\text{Total number of eggs set for incubation}} \times 100$$

$$\text{Fertile egg hatchability \%} = \frac{\text{Number of hatched eggs}}{\text{Total number of fertile eggs set for hatching}} \times 100$$

The egg quality characteristics such as egg weight, shell weight, albumin weight, yolk weight, shell percent, albumin percent, yolk percent, shell thickness, shape index, albumin index, yolk index and Haugh unit were recorded. Twenty eggs were utilized to study egg quality characteristics. The egg weight, shell weight, and yolk weight were recorded using digital weighing balance.

The length and width of the albumin and yolk were measured using vernier caliper. The shape index, albumin index, yolk index and Haugh unit were recorded using standard procedures. The data were statistically analysed according to Snedecor and Cochran (1989).

Results and Discussion

Productive and reproductive performance

The productive performance of Kadaknath chicken (Table 1) such as hen day egg production, hen housed egg production in the present study were 34.34 ± 0.43 percent and 34.24 ± 0.43 percent, respectively. Ezhil Valavan *et al.,* (2016) recorded 40 week part-time egg production in Kadaknath and reported a hen day egg production and hen housed egg production of 49.78 ± 3.2 and 43.25 ± 2.4 percent, respectively which is higher than the present findings. This may be due variation in the duration of study.

The reproductive performance of Kadaknath chicken (Table 1) in the present study such as fertility rate, hatchability on set egg and fertile egg hatchability were 91.11 ± 0.77 percent, 73.89 ± 1.43 percent and 80.95 ± 1.19 percent, respectively. In contrary to the present findings, Haunshi *et al.,* (2012) and Verma Ajeet Kumar *et al.,* (2017) reported a lower fertility rate in Kadaknath. Compared to the present findings Haunshi *et al.,* (2012) reported a higher hatchability on set egg of 77.94 percent and Jena *et al.,* (2019) reported a lower fertility, hatchability on set egg and fertile egg hatchability of 80.00 ± 4.08 %, 62.50 ± 2.50% and 78.37 ± 2.50%, respectively in Kadaknath breed.

Egg quality characteristics

The egg quality characteristics were depicted in Table 2.

Egg weight

The average egg weight in the present study was 43.75 ± 2.32 gram which was comparable with the reports of Parmar *et al.,* (2006), Biswas *et al.,* (2010), Verma Ajeet Kumar *et al.,* (2017) and Jena *et al* (2018). Whereas

Patak *et al.,* (2018) reported a lower egg weight of 36.37 ± 0.59 grams in Kadaknath breed.

Shell weight

The average shell weight was found to be 6.01±0.16 gram. Haunshi *et al.,* (2012) and Jena *et al* (2018) reported shell weight of 4.34 ± 0.04 and 4.36 ± 0.04 grams, respectively in Kadaknath breed which was lower than the present findings.

Shell thickness

The average shell thickness in the present study was 0.36 ± 0.01 mm which was comparable to the findings of Jena *et al* (2018) and higher than the findings of Biswas *et al.,* (2010) and Patak *et al.,* (2018) who reported shell thickness of 0.31 ± 0.03 mm and 0.318±0.005 mm in Kadaknath breed.

Shell percent

The average shell percent in the present study was 13.83 ± 0.39 which was higher than the findings of Haunshi *et al.,* (2012) and Jena *et al* (2018) who reported the shell percent of 10.47 ± 0.10 and 10.18 ± 0.06, respectively in Kadaknath breed.

Albumin weight

The albumin weight in the present study was 23.04 ±1.72 gram which is agreeing with the findings of Parmar *et al.,* (2006) in Kadaknath breed under farm conditions (24.76 gram).A lower albumin weight of 21.21 ± 0.21 and 21.823 ± 0.241 was reported by Biswas *et al.,* (2010) and Patak *et al.,* (2018), respectively. Haunshi *et al.,* (2012) and Jena *et al* (2018) reported albumin weight of 26.29±0.49 and 26.38 ± 0.02 gram Kadaknath breed which is higher than the present findings.

Table.1 Performance of Kadaknath chicken

Hen day egg production (%)	Hen housed egg production (%)	Fertility rate (%)	Hatchability on set egg (%)	Fertile egg hatchability (%)
34.34 ± 0.43	34.24 ± 0.43	91.11 ± 0.77	73.89 ± 1.43	80.95 ± 1.19

Table.2 Egg quality traits of Kadaknath chicken

Sl. No.	Egg quality traits	Mean ± S.E
1	Egg weight (g)	43.75 ±2.32
2	Shell weight (g)	6.01± 0.16
3	Albumin weight (g)	23.04 ±1.72
4	Yolk weight (g)	14.71± 0.57
5	Shell percent	13.83±0.39
6	Albumin percent	52.37±1.27
7	Yolk percent	33.80± 1.02
8	Shell thickness(mm)	0.36± 0.01
9	Shape index percent	73.64 ± 1.15
10	Albumin index	0.11±0.01
11	Yolk index	0.44± 0.01
12	Haugh Unit percent	87.28±1.85

Shape index

The average shape index was 73.64 ± 1.15 which is comparable to the shape index of 74.67± 0.22 reported by Jena *et al.,* (2018). In contrary to the present findings, Haunshi *et al.,* (2012), Ezhil Valavan *et al.,* (2016) and Patak *et al.,* (2018) reported higher shape index of 76.39 ± 0.57, 77.23 ± 0.22 and 76.819 ± 0.417 in Kadaknath.

Albumin index

The average albumin index observed in the present study was 0.11±0.01. Haunshi *et al* (2012), Ezhil Valavan *et al.,* (2016) and Patak *et al.,* (2018) reported albumin index of 0.072 ± 0.002, 0.075 ± 0.001 and 0.079±0.035, respectively in Kadaknath breed which are lower than the present findings.

Albumin percent

The albumin percent of kadaknath egg in the present study was 52.37 ± 1.27 which is lower than the reports of Haunshi *et al.,* (2012) and Jena *et al.,* (2018).

Yolk weight

The yolk weight in the present study is comparable to the findings of Parmar *et al.,* (2006) in Kadaknath breed (14.77 gram) under field conditions. However, lower yolk weight of 12.49± 0.09, 12.53 ± 0.006 and 13.722 ± 0.161 grams were reported by Haunshi *et al* (2012), Jena *et al.,* (2018) and Patak *et al* (2018), respectively and a higher weight of 15.20 ± 0.15 gram was reported by Biswas *et al.,* (2010).

Yolk index

The yolk index in the present study was higher than that reported Haunshi *et al.,* (2012), Ezhil Valavan *et al.,* (2016) and Patak *et al.,* (2018) in Kadaknath breed.

Yolk percent

The yolk percent in the present study of 33.80 ± 1.02 is higher than the yolk percent of 30.22 ± 0.29 and 35.56± 0.11 observed by Haunshi *et al.,* (2012) and Jena *et al.,* (2018).

Haugh Unit (percent)

The Haugh unit in the present study is comparable to the findings of Parmar *et al.,* (2006) in Kadaknath breed (85.90) under farm. However, lower Haugh units of 68.51 ±2.34, 74.99 ±0.69, 76.46 ± 0.25 and 71.91 ± 0.47 percent were observed in kadaknath breed by Biswas *et al.,* (2010), Haunshi *et al.,* (2012), Jena *et al.,* (2018) and Patak *et al.,* (2018), respectively. Higher Haugh unit in the present study indicates better egg quality.

From this present study, it is concluded that the reproductive performance and egg quality traits of the Kadaknath breed under semi-intensive system are better.

References

Biswas,A., Mohan, J. and Sastry, K. V. H. 2010. Effect of Vitamin E on Production Performance and Egg Quality Traits in Indian Native Kadaknath Hen. *Asian-Aust. J. Anim. Sci*., 23(3):396-400.

Ezhil Valavan, S., Omprakash, V. and Bharatidhasan, A. 2016. Production performance of kadaknath in an organized poultry farm. *International Journal of Applied and Pure Science and Agriculture*, 11: 125-128.

Haunshi S., Shanmugam, M., Padhi M.K., Niranjan, M., Rajkumar U, Reddy MR, Panda AK. 2012. Evaluation of two Indian native chicken breeds for

reproduction traits and heritability of juvenile growth traits. *Trop Anim Health Prod*., 44(5): 969-73.

Jena, P., Panigrahi, B., Panda, N., Mohapatra, L., Mallik, B., and Bagh, J. 2018. Reproductive

Mohan, J., Sastry, K.V.H., Moudgal, R.P. and Tyagi, J.S. 2008. Performance profile of Kadaknath desi hens under normal rearing system. *International Journal of Poultry Science*, 43:379–381.

Parmar, S., M.Thakur, S. Tomar and P. Pillai, 2006.Evaluation of egg quality traits in indigenous Kadaknath breed of Poultry. *Livestock Research for Rural Development*, 18 (9)

Pathak, S.S., U. Tamuli, S. Khargharia, G. Bordoloi, L. S. Khuman, P. Chabukdahara, A.Gogoi, P. Rajbongshi, K. Saikia, K. Boruah, 2018. Comparative evaluation of Egg Quality Parameters of Kadaknath and Vanaraja Chicken in Intensive Farming System. *Indian J. Vet Sci. Biotech***,** 14(2):49-51

Performance and Egg Quality Traits of Kadaknath in Intensive Managemental Condition under Hot and Humid Climate. *International Journal of Livestock Research*, 8(12**)**: 105-112.

Snedecor G. W. and Cochran W. C. 1989. Statistical methods; 8th edition. Iowa state University Press, Ames, Iowa.

Verma Ajeet Kumar, Pramanik P.S., Singh K.D., Kashyap S.S. 2017. Comparative studies on fertility and hatchability of Rhode Island Red, Kadaknath and Aseel fowls. *Indian Journal of Poultry Science*, 52 (2): 228-230.

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