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# Performance of Kadaknath Breed of Fowl Under Intensive System of Housing in Malwa Region of Madhya Pradesh

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**ABSTRACT**

Study was carried out on 500 straight run chicks of Kadaknath breed of fowl, under intensive system of housing up to 5 months of age. The average daily feed consumption, body weight, body weight gain and feed conversion ratio (FCR) were recorded weekly up to 8 week of age and thereafter at monthly interval up to 5 months of age. The average weight of day old chicks was 28.55 ± 0.5 g. The mean weekly feed consumption recorded from 1-8 week of age was 21.29 ± 0.11, 46.43 ± 0.71, 82.60 ± 0.9, 104.38 ± 2.09, 115.45 ± 2.66, 150.51 ± 1.17 and 163.63 ± 2.99 and 244.52 ± 2.62 g, respectively. The overall mean weekly body weight gain from 1-8 week of age was 7.54 ± 0.10, 16.84 ± 0.44, 32.23 ± 1.87, 42.42 ± 3.23, 50.91 ± 1.22, 72.30 ± 3.36, 70.59 ± 4.24 and 86.34 ± 5.65 g, respectively. The corresponding values obtained for FCR were 2.82 ± 0.35, 2.75 ± 0.09, 2.56 ± 0.05, 2.46 ± 0.05, 2.26 ± 0.03, 2.09 ± 0.08, 2.32 ± 0.13 and 2.84 ± 0.12. The weekly body weight gain linearly increased up to eight week. The mean monthly feed consumption during 3rd, 4th, and 5th month of age was 1682.09 ± 38.59, 1739.05 ± 11.84 and 1622.83 ± 7.14 g, respectively. The overall mean weight gain recorded at 3rd, 4th, and 5th month of age was 260.52 ± 7.49, 174.58 ± 7.50 and 131.41 ± 18.84 g, respectively. The corresponding values for FCR were 6.46 ± 0.06, 9.97 ± 0.37 and 12.56 ± 1.98, respectively. The dressing percentage, giblet yield, breast muscle, thigh muscle, abdominal fat and weight of organs (spleen, thymus and bursa) were 70.43 ± 1.79, 5.35 ± 0.02, 19.41 ± 0.13, 14.91 ± 0.25, 1.59 and 0.88 ± 0.04 per cent, respectively of live weight at 5 months of age. An overall mortality of 25.2 % was recorded during entire period of experiment with a maximum of 11.40% during first week.

**HIGHLIGHTS**

- Economic traits of Kadaknath under intensive system of housing.
- To establish feed requirement under intensive system of housing.
- Adoptability of Kadkanth birds in malwa region of M.P.

**Keywords:** Kadaknath fowl, Black meat chicken, Growth rate, Feed Conversion Ratio, Carcass traits

Kadaknath fowl, also called as "Kalamasi" meaning black meat or black flesh, is an inhabitant of Jhabua, Alirajpur and Dhar Districts of Western Madhya Pradesh. This breed is mainly reared by tribal communities of these districts. Some of the important breed characteristics have been established in these birds through many generations of selection and fixation of genes. Kadaknath birds are always in demand due to its meat quality, texture and taste. The birds are said to have some medicinal properties. Compared to demand, its availability is very low (Parmar *et al*., 2003). Literature on morphological and productive traits of the Kadaknath breed of poultry is scanty. Present study was undertaken to study the growth rate, feed conversion efficiency and carcass traits of Kadaknath breed of fowl upto five months of age under intensive system of housing.

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## MATERIALS AND METHODS

Study was carried out on 500 straight run chicks of Kadaknath breed of fowl up to 5 months of age, under intensive system of housing (deep litter). The chicks were randomly distributed in four replications ($R_1$, $R_2$, $R_3$ and $R_4$) of 125 chicks each. The birds were fed with chick starter having 20% Crude Protein and 2700 kcal/kg ME and grower ration having 18% Crude Protein and 2500 Kcal /kg ME. The average daily feed consumption, body weight, gain in body weight and feed conversion ratio (FCR) were recorded weekly up to eight week of age and thereafter at monthly interval upto 5 months of age. The individual birds were weighed at the end of each week upto 8 week of age and the total body weight gain per week was calculated by subtracting the initial weight of bird from the final weight attained during that particular week. After 8 week of age feed conversion ratio was recorded at monthly interval upto 5 month of age. The estimated weight of all dead birds was added in total live weight to correct the feed efficiency losses due to mortality.

At the end of the experiment five birds from each replicate were randomly selected for evaluation of dressed weight, cut-up yields (breast, thigh), giblet yield (liver, heart, and gizzard), organ weight (spleen, bursa and thymus) and abdominal fat. The birds were kept off feed for a period of twelve hours prior to slaughter. The carcass traits were expressed as % of live weight**.** The live weight of the birds was recorded before slaughter. For obtaining edible carcass yield, the carcass was weighed after removal of feathers, viscera, head and legs. The percent weight of edible carcass, different edible organs such as breast yield, thigh yield etc. was calculated over dressed weight.

Weekly mortality rate was also determined during entire experimental period. The mortality rate was expressed as percentage of all birds housed / procured during starting of the experimental period.

## RESULTS AND DISCUSSION

### Feed consumption

The weekly feed consumption recorded in Kadaknath birds from one to eight week of age ranged from 21.29 ± 0.11 to 244.52 ± 2.82 g and the monthly feed consumption from 3 to 5 month of age ranged from 1682.09 ± 38.59 to 1622.83 ± 7.14 g (Table 1). Present findings are in agreement with those, reported by Gupta *et al.* (2000) in Aseel birds. However, previous studies have reported comparatively lower feed consumption in Kadaknath birds (Parmar *et al.,* 2003; Jain *et al.,* 2010). The analysis of variance revealed non-significant differences between replications, confirms the uniform management practices adopted during course of investigation.

### Body weight and weight gain

The average weight of day old chicks was found to be 28.55 ± 0.5 g. ranging from 27.81 ± 0.66 to 29.04 ± 1.25 g in replication. The body weight increased linearly over age during the entire experimental period and the birds attained 974.28 ± 17.96 g weight at 5 months of age (Table 1). The body weight so obtained in Kadaknath birds in present study is comparable to the findings of Sachdeva *et al.* (1990) in Kadaknath fowl. However, higher body weights at different ages have been reported in Thai Native birds (Siripholvat, 1999), Aseel and Kadaknath crosses (Gupta *et al*., 2006; Mondal *et al.,* 2007) and in Kadaknath fowl (Sharma *et al.,* 2012). Thakur *et al.* (2006) and Thakur and Parmar (2011) have reported lower body weight in Kadaknath birds. The variations observed among various studies could be partly attributed to genetic constitution of the birds. The weekly gain in body weight linearly increased from 7.54 ± 0.10 at one week of age to 86.34 ± 5.65 g. at 8 week of age. The rate of gain showed a reducing trend from fourth month onwards. The analysis of variance showed non significant differences between replications for all the age groups (P>0.05).

### Feed conversion ratio (FCR)

Kadaknath birds are mostly reared for table purpose and hence, feed conversion ratio is an important economic trait in the birds which determines the overall profit. The FCR obtained in the present study ranged from 2.09 ± 0.08 to 2.84 ± 0.12 from one to eight week of age. The FCR obtained at 3, 4 and 5 month of age was 6.46 ± 0.06, 9.97 ± 0.37 and 12.56 ± 1.98 (Table 1). The R4 replication exhibited poor FCR which could be attributed to the fact that there were more females in this replication group. The analysis of variance showed non-significant differences between the replications for most of the age groups (P>0.05), except for 3$^{rd}$, 4$^{th}$, 5$^{th}$ weeks and 5 month of age.

**Table 1:** Feed consumption, weight gain and feed conversion ratio (g)

| Age | Feed consumption (g) | Body weight (g) | Weight gain (g) | Feed conversion ratio |
|---|---|---|---|---|
| 1 week | 21.29 ± 0.11 | 36.10 ± 0.31 | 7.54 ± 0.10 | 2.82 ± 0.35 |
| 2 week | 46.43 ± 0.71 | 52.95 ± 0.53 | 16.84 ± 0.44 | 2.75 ± 0.09 |
| 3 week | 82.60 ± 0.92 | 85.18 ± 1.45 | 32.23 ± 1.87 | 2.56 ± 0.05 |
| 4 week | 104.38 ± 2.09 | 127.60 ± 3.06 | 42.42 ± 3.23 | 2.46 ± 0.05 |
| 5 week | 115.45 ± 2.66 | 178.49 ± 3.63 | 50.91 ± 3.22 | 2.26 ± 0.03 |
| 6 week | 150.51 ± 1.17 | 250.80 ± 9.57 | 72.30 ± 3.36 | 2.09 ± 0.08 |
| 7 week | 163.63 ± 2.99 | 321.38 ± 5.70 | 70.59 ± 4.24 | 2.32 ± 0.13 |
| 8 week | 244.52 ± 2.62 | 407.73 ± 3.18 | 86.34 ± 5.65 | 2.84 ± 0.12 |
| 3 Month | 1682.09 ± 38.59 | 668.30 ± 6.59 | 260.52 ± 7.49 | 6.46 ± 0.06 |
| 4 Month | 1739.05 ± 11.84 | 842.87 ± 10.11 | 174.58 ± 7.50 | 9.97 ± 0.37 |
| 5 Month | 1622.83 ± 7.14 | 974.28 ± 17.96 | 131.41 ± 18.84 | 12.56 ± 1.98* |
| **Overall** | **5973.12 ± 128.31** | — | **945.73 ± 47.22** | **6.31 ± 1.03** |

The results obtained in the present study are in agreement with the findings of Gupta *et al.* (2000) in Kadaknath birds. Results obtained by Parmar *et al.* (2003) in Kadaknath birds reared in Jhabua district are comparable with present findings.

## Carcass traits

The dressing percentage was found to be 70.43 ± 1.79 in Kadaknath birds slaughtered at 5 months of age. Similar finding have been reported in Aseel (Gupta *et al*., 2000), Kadaknath (Sachdeva, 1990; Parmar *et al.,* 2003) and in Tellicherry chicken of Kerala (Kumar *et al*., 2013). Higher dressing percentages were reported in Thai Indigenous birds and fast growing varieties like Leghorn, RIR, Plymouth rock (Kongruttananun, 1992; Intharachote *et al.,* 1996). The giblet yield in Kadaknath birds was 5.35 ± 0.02 % of live weight. These findings are comparable with the results obtained by Parmar *et al.* (2003) in Kadaknath birds at 23 week of age (7.7 %), by Kumar *et al.* (2013) in Tellicherry chicken of Kerala (6.03 %) and by Balaji *et al.* (2008) in broilers (4.13 %). The values recorded for breast muscle, thigh muscle, abdominal fat and weight of organs (spleen, thymus and bursa) were 19.41 ± 0.13, 14.91 ± 0.25, 1.59 and 0.88 ± 0.04 percent, respectively. Parmar *et al.* (2003) and Kumar *et al.* (2013) recorded higher percentage of breast muscle. However, the proportion of this is comparable with present study. The abdominal fat recorded in present study was higher than those obtained by Parmar *et al.* (2003) in Kadaknath birds.

## Mortality

An overall mortality of 25.2% was recorded during entire period of experiment. Maximum mortality was recorded during first week (11.4 %) followed by second week (2.6%). Pandian *et al.* (2013) recorded mortality ranging from 3.01 % to 56.58 % during brooding and growing periods in White Leghorn, RIR and their crosses. During first week most of the chicks died due to yolk sac infection (11.4 %). Terregino *et al.* (2000) also observed yolk sac infection as one of the common causes of mortality in the first week of age. However, Sharma *et al.* (2005) reported higher deaths due to omphalitis, colibacillosis and pneumonia during first week of age in broilers. A higher mortality rate recorded during sixteenth week (2.4 %) was due to occurrence of fowl cholera and salmonellosis at this age.

## CONCLUSION

Present findings establish the standards for Kadaknath on feed requirement under deep litter system. The feed conversion ratio was poor in Kadaknath birds as compare to fast growing birds. The breast muscle and edible organs of Kadaknath birds are in higher proportion whereas; abdominal fat is lower in comparison to fast growing birds. It is imperative from results that Kadaknath birds, as with other breeds, need extra care during first two weeks of brooding. The overall findings suggest that Kadaknath birds can perform well in Malwa region of M.P.

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