Effect of Different Management System on Haemato-biochemical profile in Quail

Vijay Kumar, R.K. Verma*, Satish Kumar, S.K. Singh and Ramesh Kumar Singh

Department of Livestock Production and Management
Ranchi College of Veterinary Science and Animal Husbandry, Ranchi Jharkhand (India)
* Corresponding author

Abstract

A very little information is available in literature on management of Japanese quail (*Couturnix Couturnix Japonica*) in different housing system (cage system and deep litter system) of management. The average weekly body weight gain was significantly higher in deep litter system (34±0.43gm) than cage (12.71±0.41gm) system at the 3rd week of age. The average daily feed consumption by individual quails was higher in cage (12.71±2.10) than deep litter system (11.84±1.47) during 0-6 weeks of age. The haematobiochemical profile viz Hb (gm%),TEC (10^6/µl),PCV(%),TLC(10^3/ µl)along with biochemical studies as blood sugar (mg/dl), total serum protein (gm/dl),serum calcium (mg/100ml) and serum phosphorus (mg/dl) were well within the normal health of quail under both cage and deep litter system of management.

Keywords: Management System, Quail, Hemato-biochemical profile, Cage sytem, Deep Litter system.

Introduction

The chicks (Quail) were brooded up to 2 weeks under cage type of brooder with ad lib. Feed and drinking water. The temperature was adjusted to about 950F at first week and 50F temperature was reduced every week up to 6 weeks of age. Brooding house was provided with adequate ventilation and continuous light. The experiment was conducted in Bater Vatika at Ranchi College of Veterinary Science and Animal Husbandry, Ranchi (Jharkhand).

Materials and Methods

The present study was conducted 250 day old Japanese quail procured from Government Poultry Farm, Durg. All these day-old quails were brought by train and maintained under standard management conditions at Bater Vatika, Ranchi Veterinary College.

The brooder house as well as cage, feeders and waterers were cleaned and disinfected well before the start of experiment. The chicks were brooded upto 2 weeks under cage type of brooder with ad lib. feed and drinking water. Half of the total birds separated under deep litter system and other half in cage system. The provision of heat was made by using electricity for which 200 watt fixed in each cage. Temperature was adjusted at about 950F at firs week and reduction of 50F temperature at every week upto 6 weeks of age. Brooding house was provided with adequate ventilation and continuous light. The serum glucose was examined by GOD/POD (Glucose Oxidase/Peri Oxidase) method of Trinder (1960). The test was done by the reagents of Spam diagnostic Pvt. Ltd. Surat, India. Total serum protein was estimated by the method of Lowry et al. (1957). The serum calcium level was estimated as per the method of Trinder (1960) by using the chemical kit. The serum phosphorus level was estimated as per the method of Daly (1972) by using chemical kit.

The blood was collected at the age of 40 days of experiment from 6 males and 6 female quails in each group from wing vain for assessment of the biochemical profile of blood serum. The blood was taken with the help of syringe and kept in small clean penicillin vials by adding anticoagulant EDTA (Ethylene Diamine Tetra Acetate) @ 1mg/ml. The collected blood samples were kept in refrigerator until analysed. Haemoglobin was estimated by automated hematology analyzer (Transasia, Jakan). Total Erythrocyte count was done with the help of Neubaur's haemo cytometer using normal saline as diluting fluid and as per the standard method Schalam et al. (1975).

Results and discussion

The result on the performance of Japanese Quail (Coturnix coturnix japonica) under different system of

Table-1. Shows the mean (Mean±SE) value of Hb, TEC, PCV, TLC, total serum protein, serum calcium and serum phosphorus.

Parameters	Treatment group	Control group
Hb (g%)	13.18±0.26	13.10±0.22
TEC (106/µl)	3.58±0.10	3.38±0.10
PCV (%)	42.02±0.72	40.0±0.50
TLC (103/µl)	21.20±0.58	21.00±0.46
Serum glucose (mg/dl)	175.78±3.68	182.15*±0.05
Total serum protein (g/100 ml)	4.11±0.02	54.0±0.02
Serum calcium (mg/100 ml)	16.20±0.09	15.80±0.08
Serum Phosphorus (mg/dl)	6.9±0.04	6.7±0.03

management have been presented under the following sub heads. The present study has made on 250 day-old Japanese quails maintained under cage and deep litter system to see the effect on haematological and biochemical profile.

Heamatobiochemical profiles of Japanese quail at the age of 40 days are presented in Table-1. The different heamotobiochemical profiles viz. Hb (gm%) TEC (106/ul), PCV (%), TLC (103/ul), Total Serum Protein (g/100 ml), Serum Calcium (mg/100 ml) and Serum Phosphorus (mg/dl) did not differ significantly among different sexes and systems of management except the serum glucose (mg/dl) which was significantly ($P<0.01$) higher in female (182,15± 0.05 g/100 ml) than male (169.45±0.41g/100 ml). The over all pooled values for Hb, TEC, PCV, TLC, Serum Glucose, Total Serum Protein, Serum Calcium and Serum Phosphorus were 13.18±0.26 gm%, 3.58±0.10 (106/µl), 42.02±0.72 (%), 21.20±0.58 (103/ µl), 175±3.68 (mg/dl), 4.11±0.02 g/100 ml, 16.20±0.09 mg/100 ml and 6.90±0.04 (mg/dl) respectively.

Sato et al., (1985) reported positive correlation between Total Serum Protein and body weight. We observed that there is no significant effect on Total Serum Protein in different management condition. Phillomina and Pilla (1995) observed lower calcium, having negative correlations between the dietary calcium and serum calcium level. We observed no significant effect on serum calcium level due to different housing systems or managemental conditions.

The feed forms an important component of husbandry system and it influences the growth, immune system and performance of the quails. The feeding regimens of chicks were as follows:

a) Starter ration (0-3 weeks)
b) Grower ration (3-5 weeks)
c) Layer ration (5 weeks onward upto 12 weeks)

Halmingthanga and Shrivastava (1998) reported that serum inorganic phosphorus was not affected by phosphorus given in diet. In present investigation no significant effect of housing system on Total Serum Protein was observed. Kumar et al., (2001) reported significant decrease in PVC, Hb and TEC in infected bird (S. Typhimurium). We didn't find any significant difference due to different managemental conditions. Raji et al., (1999) observed that two weeks feed restriction didn't influence the level of blood glucose. This investigation suggest deep litter system is better than cage system of farming specially in quail management.

References

1. AOAC (1990): official methods of analysis (15th Edn.) Association of Official Analytical Chemist, Washington, D.C.
2. Kumar, S.et.al. (2001): Studies on clinical signs, growth response and haematological changes in Japanese quail (Coturnix coturnix japonica) infected with Salmonella typhymurium. *Indian J. Poult. Sci.*, 36:335.
3. Lalmingthanga and Shrivastava, K. (1998): Effect of supplemental magnese in relation to dietary calcium levels on the performance of growing quail. *Indian J. Poult. Sci*., 33:166.
4. Lowry, O.H. et.al.(1951). *J. Biol. Chem*. 193.
5. Philomina, M. and Pilla, R.M.G. (1999): Influence of dietary calcium and age in the phosphatase profile of blood plasma in japanese quails, *Indian J. Poult. Sci*., 34:347.
6. Raji, K. et.al. (1999): Effect of feed restriction on body weight gain, liver weight and the levels of blood glucose and liver nitrogen in japanese quail. *Indian J. Poult. Sci.* 34:201.
7. Sato, K. et.al. (1985): Genetic parameters of serum protein levels in japanese quails. Scientific Reports of the Faculty of Agricultural, Okayama University 65:39.
8. Snedecor, G.W. and Cochran, W.G. (1989): Statistical methods, 8th Edn. Lowa State Univ. Press. Ames, U.S.A.

* * * * * * * *