Blood chemistry analyses of Japanese quail (*Coturnix coturnix Japonica*)

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Asia as well as Bangladesh is suitable for quail farming. There are no other birds except quail for early maturity which lay eggs within 114 to 120 days. Its flesh and eggs are very nutritive and it can be reared in a short or narrow space of residence. Valuable blood components such as haematological test, haemoglobin (13.13 ± 0.22%), lymphocyte (64.30 ± 3.47%), and monocytes (3.60 ± 0.97%) were found. Biochemical analyses like calcium was (10.06±0.42 mg/dl), glucose (193 ± 4.42 mg/dl), and cholesterol (144 ± 2.58 mg/dl) and in serological study, it showed that for albumin, it was (15549 ± 141.85 mg/dl), globulin (14915.50 ± 128.29 mg/dl) and total protein (30464.50 ± 238.50 mg/dl). The aforementioned components are sufficient for its life saving nature. Till now, the poverty alleviation in our country is good for farming. Broiler and layer breeds are both suitable and at present both of them are being reared in our country. The average body weight found in cock was 250 g and hen 150 g.

Key words: Quail, haematology, biochemical, serology.

INTRODUCTION

Quail farming in Bangladesh is a newly introduced sector of livestock. It is a maturing bird that matures sexually within 114 to 120 days and lay eggs. In a developing country, this is a new venture of diversification for fulfilling human protein demands (Ali et al., 2012). The size of its egg is very small and spotted as wild bird, a reason why most persons do not eat it as food and it is small in body size and as such not acceptable for slaughtering. The egg components of quail are nutritious and are good for farming. This is a disease susceptible bird that easily copes with the environment. The Japanese quail (*Couturnix japonica*) is a species of quail found in East Asia (Temminck and Schlegel, 1849). The Japanese quail is used mainly for its table and egg purpose.

Blood chemistry refers to the chemical composition of blood and is important for detecting any blood disease of the animals as well as birds. It includes normal haematological, biochemical and serological tests. In haematological studies, such common parameters such as the haemoglobin percentage, lymphocytes and monocytes are usually estimated. In biochemical studies, common parameters like calcium (Ca), glucose, and cholesterol are assayed. For serological tests, however, albumen, globulin and total protein are usually estimated.

In previous studies, there were no differences in serum parameters among juvenile males and females (Schmidt et al., 2007) and serum calcium concentrations were found to decrease during peak egg production of the chickens (Peebles et al., 2009). Glucose and cholesterol produced energy while total proteins indicated the albumin and globulin of the blood (Adeyemo et al., 2010). Recently, Dutta (2010) studied the haemato-biochemical parameters in a number of chicken breeds. Here, three vital haematological, biochemical and serological parameters were estimated from quail in the study area.

MATERIALS AND METHODS

Collection of birds

Ten (10) pairs of quails collected from Parbatipur and Dinajpur district were reared in cages measured 18 × 16 × 12 inches (Figure 1).

Blood collection

Blood from live birds were collected mostly from the
brachial vein or occasionally from wings, jugular and cutaneous veins. Cleaning and sterilizing the site of the blood collection were first maintained (table 1). In doing this, cotton, spirit and 3 cc syringes of (22 to 26) gauze and 1 inch of needle were used for every 2 cc blood sample.

Blood was collected from each bird in a period of seven days interval. The heart puncture technique was very risky, traumatic and resulted in many side effects in the process and as such was not be used in the experiments (Arora, 2010).

Blood storage

Collected blood was stored in a vial with (Ethylenediaminetetraacetic acid) (EDTA), then, the haematology, biochemical and serological examinations were carried out as soon as possible (Figures 2 to 5).

RESULTS AND DISCUSSION

Haemoglobin percentage of the quail was found to be 13.13 ± 0.22 while lymphocytes and monocytes are 64.30±3.47 and 3.60±0.97 respectively. The value of quail haemoglobin was similar with the work of Moraes et al. (2008). Japanese quail shows the haemoglobin levels which are remained stable up to the seventh week of age (Ali et al., 2012). In the case of haemoglobin, it is good for overall disease resistance and adequate number of lymphocytes and monocytes showed direct fights with antigens within the body. The haematological values in

Table 1. Table shows the mean and standard deviation of the blood chemistry of quail.

<table>
<thead>
<tr>
<th>Parameters (%)</th>
<th>Haematological</th>
<th>Parameters (mg/dl)</th>
<th>Biochemical</th>
<th>Parameters (mg/dl)</th>
<th>Serological</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haemoglobin</td>
<td>13.13 ± 0.22</td>
<td>Calcium</td>
<td>10.06 ± 0.42</td>
<td>Albumin</td>
<td>15549 ± 141.85</td>
</tr>
<tr>
<td>Lymphocytes</td>
<td>64.30 ± 3.47</td>
<td>Glucose</td>
<td>193 ± 4.42</td>
<td>Globulin</td>
<td>14915.50 ± 128.29</td>
</tr>
<tr>
<td>Monocytes</td>
<td>3.60 ± 0.97</td>
<td>Cholesterol</td>
<td>144 ± 2.58</td>
<td>Total Protein</td>
<td>30464.50 ± 238.50</td>
</tr>
</tbody>
</table>
Figure 2. Instruments for haematology.

Figure 3. Centrifuge machine instead of chemicals for biochemical tests.
Figure 4. chemicals for biochemical tests instead of centrifuge machine.

Figure 5. Micropipette.
birds other than chickens were comparable with the works of Hossain (2007) and Moraes et al. (2008).

Quail possess excellent disease resistance than chickens (Deka and Borah, 2008). The blood biochemical analysis is important in diagnosis and clinical monitoring of disease (Karesh et al., 1997). As regards the biochemical tests, calcium showed 10.06 ± 0.42 mg/dl, whereas, glucose and cholesterol in average shows 193 ± 4.42 mg/dl and 144 ± 2.58 mg/dl respectively. In biochemical tests, the amount of calcium is important for its egg production. Glucose produces energy supply which is related to body mechanism of all birds. Bahie et al. (2009) observed that total protein values of quail decreased with progressing age and increased onset of egg production (Urist et al., 1958). Total protein including albumin and globulin indicates the body defense mechanism. Finally, the value of serological test showed 15549 ± 141.85 mg/dl of albumin and 14915.50 ± 128.29 mg/dl of globulin. Findings of the value of blood chemistry were more or less similar except the value of glucose, albumin and calcium (Ali et al., 2012).

Conclusion

In our environment, quail is really good for surviving. In all birds, there is not an alternative one which lay eggs within a short time. This is a cage and laboratory bird and it is few in most parts of the world. Its flesh and egg is good for any patients. Short or narrow space is accepted for its culture and our household garbage could serve as feed.

Valuable blood components such as haemoglobin, glucose, cholesterol and total protein is suitable or sufficient for its life saving nature. For early maturation and egg laying, this is a king amongst birds. Its small egg and body size is sufficient for a single man’s diet. For poverty alleviation, it is good for farming. Broiler and layer breed are both suitable in our nature. Quail is a less expensive bird in comparison to other birds.

REFERENCES


