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Research Article

Hematological and Biochemical Values in Ducks

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Abstract

In today's world the interest of farmers is also increasing towards the poultry farming as well as in keeping ducks, geese, quail, and other species of poultry and waterfowl for raising their socioeconomic status. The physiologic especially the hematological and biochemical parameters are utmost important to determined their health status, body condition, adaptation to habitat and useful diagnostic tools in veterinary practice and ecological research. The aim of the study was to obtain hematological and biochemical parameters of these birds. Hematological and blood chemical values were determined for Indian captive Ducks. These blood samples were evaluated to establish normal blood values in ducks. Blood samples of twelve were collected from the brachial vein and analyzed within two hrs. of collection. Hematological parameters such as Hemoglobin, packed cell volume, erythrocyte and totalleukocyte count and biochemical parameters like blood glucose, total protein, alkaline phosphatase, glutamic oxaloacetic transaminase and SGPT were determined. The hematological and biochemical values should prove useful in providing background information and documenting baseline data for intra and interspecies comparisons with normal and diseased birds. The birds sampled in this work were clinically healthy and the means and standard deviations shown give an indication of the normal range.

Keywords: Ducks; Hematological; Biochemical; Parameters

Introduction

In today's world the interest of farmers is also increasing towards the poultry farming. Along with this they are also interested in keeping ducks, geese, quail, and otherspecies of poultry and waterfowl for raising their socioeconomic status. The physiologic especially the hematological and biochemical parameters are utmost important to determined the health status of these birds.

Hematologic and blood biochemistry analyses are valuable tools for evaluating health of waterfowl both in normal and disease conditions [1]. However, proper interpretation of these parameters requires appropriate reference (normal) values for each species to minimize the effect of species differences. Additional factors such as sex or age may also affect the blood profile (both hematological and biochemical) of avian species [2]. For this purpose this study was undertaken to find out the normal hematological and biochemical values in ducks. Similar work was also done by Hatipoğlu and Bağci [3] on pekin and indigenous ducks and they found that the mean values for R.B.C., W.B.C., Hb, P.C.V., neutrophils, lymphocytes, basophils, eosinophils and monocytes were 3.835 x 10(6)/mm3, 15.950/mm3, 12g%, 36.15%, 62.10%, 30.95%, 5.8%, 0.6% [corrected] and 0.6%, respectively. Kavitha., *et al.* [4]

found that the Indigenous ducks of Tamil Naduhad significantly (P < 0.01) higher Hb, PCV and TEC than White Pekin ducks while Total Leucocyte Count (TLC) and Mean Corpuscular Haemoglobin (MCH) were significantly (P < 0.01) higher in White Pekin ducks. Sex had no significant effect on White Pekin and Indigenous ducks of Tamil Nadu. Hence, it was concluded that breed had greater influence on many of the Haematological Parameters between White Pekin and Indigenous ducks of Tamil Nadu. Sujatha., *et al.* [5] studied different hematological and biochemical parameters in Andaman local ducks and concluded that all ducks having normal blood parameter values and they were in normal physiological and good condition. Based on these results, the haematological and biochemical values could be used for monitoring the physiological status of these indigenous duck population.

Material and Methods

A total of twelve healthy ducks were used for this study. Blood samples (3 ml) were collected from the brachial vein with anticoagulant for hematology and without anticoagulant for serum for biochemical analysis. Blood samples were processed in the laboratory within 12hr, and hematologic analysis was performed on the day of collection.Blood and serum analysis was done using standard methods for hematology and biochemistry. The biochemical parameters like blood sodium, potassium, glucose, total protein, albumin, globulin, albumin: globulin ratio, alkaline phosphatase, glutamic oxaloacetic transaminase and SGPT were also determined. Data were analyzed statistically by using methods given [6].

Results and Discussion

Twelve healthy ducks with good condition, and no abnormalities were studied for hematological and biochemical analysis. Hematological values are shown in tables 1 and blood biochemical values are presented in table 2.

This study determined hematologic values and serum biochemistry for ducks. The hematological values in the present study were in accordance with the hematological values observed by [7], in Nigerian ducks. but the values for sodium and potassium in the present study were higher than the values given by [7-9], in Indigenous ducks [4] and inAndaman local ducks [5]. However, the values of plasma sodium in the two sex of birdin the present study were lower than the values of 198.90 mmol/L and 207.13 mmol/L reported in the guinea fowl and Nigerian domestic fowl, respectively [10].

The values for the other parameters were also within the range.

Parameters	Male	Female
RBC (millions/ul)	2.88 ± 0.41	2.94 ± 0.26
PCV (%)	44. 08 ± 6.93	44.67 ±7.08
Hb (g/dl)	13.90 ± 23.10	15.12 ± 24.90
WBC (thousands/ul)	7.5 ± 0.28	6.4 ± 0.26
MCH (pg)	48.26 ± 9.89	51.42 ± 75.93
MCHC (g/dl)	31.53 ± 5.37	33.84 ± 4.28
MCV (fl)	153.05 ± 36.52	151.90 ± 18.42

Table 1: Haematological values for Normal Ducks (Mean ± SD).

Parameters	Male	Female
Sodium (mmol/L)	166.38 ± 9.04	164.43 ± 9.44
Potassium (mmol/L)	18.03 ± 4.26	17.99 ± 3.96
Total protein (g/L)	32.60 ± 7.80	33.40 ± 8.10
Albumin (g/L)	12.50 ± 2.90	13.35 ± 2.90
Globulin (g/L)	20.10 ± 5.10	20.05 ± 5.10
Albumin/globulin ratio	0.62 ± 0.08	0.66± 0.08
Glucose (mg/dl)	256.32 ± 32.87	276.32 ± 44.09
SGOT (IU)	142.07 ± 22.97	146.78 ± 25.77
SGPT (IU)	12.98 ± 3.43	15.54 ± 3.97
ALP (IU)	191.03 ± 54.89	187.76 ± 51.67

Table 2: Blood Biochemistry findings for Normal Ducks (Mean **±** SD).

Conclusion

In this present study it was concluded that there was no significant influence found on haematological and biochemical profile, by sex, but the normal hematological and biochemical values depict the physiological status of ducks in both the sexes.

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