

Effect of sex on haematological parameters in Emu (*Dromaius novahollandiae*)

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Introduction

Now-a-day, Indian poultry industry is growing at faster rate. But due to adverse environmental conditions, disease outbreak and increasing feed cost, profit margin over egg and meat is decreasing day-by-day. Hence, many poultry farmers have diversified from poultry to Emu farming because of its economic values. Emus are second largest bird of the world belongs to order *ratite* (flightless bird with a flat breast bone) and are the native of deserts and woodlands of Australia (Shendare et al., 2007). Emu (*Dromaius novahollandiae*) is newly introduced avian species in to the country. The information on various blood parameters of this bird is scanty (Ravindra Reddy et al., 2003). A number of clinical disorders can be assessed from clinical hematology and blood chemistry (Okatie-Eboh et al., 1989).

No references are available regarding the effect of sex on hematological parameters in Emu. Therefore, an attempt is made to estimate the normal values of blood parameters and to study the effect of sex on hematological parameters in Emu. . The experimental birds are kept under scientific management, housing and feeding practices at private emu farm, Ane, dist-Pune (MS).

Material and Method

Blood samples were collected from 14 birds (7 males and 7 females) aged 18 months. It is the age of sexual maturity in Emus (Shendare et al.,2007).The best place to collect blood from emu is right jugular vein(Ravindra Reddy et al. ,2003). About 5 ml of blood was collected in standing position from right jugular vein of experimental birds,in citrated vials in the morning hours . Sample collection was carried out aseptically by using 21 gauge needles.

Blood samples were analyzed for Total Erythrocyte Count(TEC) and Total Leukocyte Count (TLC) by Neubauer's heamocytometer method , Haemoglobin(Hb) by acid heamatin (Sahali's haemoglobinometer)method, Packed Cell Volume (PCV) and Erythrocyte Sedimentation Rate (ESR) by Wintrobe's method and Differential Leucocytes Count(DLC) by using Write's stain. All these method are standard methods used for hematological parameters(Schalm,1986).

Statistical Analysis: Significance of differences among the haematological parameters in both sexes was determined by student-t test by using Web Agricultural Statistical Package of ICAR (www.icargoa.res.in/wasp/tt22.php).

Result and Discussion

Mean hematological values ($\pm$ S.E.) of male and female Emus are presented in Table-1. Total erythrocyte count (106/cumm) in male (1.79 ± 0.08) was significantly ($P < 0.01$) higher than that of female (1.36 ± 0.05). The values of Hb (g/dl) and PCV (%) in male are 11.97 ± 0.17 and 37 ± 2.25 in comparison to 11.8 ± 0.59 and 36.71 ± 1.86 in female. These values of Hb and PCV are slightly higher in male, although are not statistically significant. Significantly ($P < 0.05$) higher value of ESR (mm/hr) in male (1.3 ± 0.04) was observed than that of female (1.09 ± 0.06). Total leukocyte count (103/cumm) in male was (17.21 ± 1.19) that of female Emu was 14.31 ± 0.84 without any statistical difference. Leucocytes show the same pattern of distribution in both the sexes. All the values are in normal range as reported previously (Ravindra Reddy et al.,2003).Male emu shows the higher TEC and ESR values than female. The significantly higher values ($P < 0.01$)of TEC and ESR in male than in female Emus The significantly

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Table-1: Mean Haematological Parameters in Male and Female Emu Birds of 18 months of Age.

Hematological parameters	Male	Female
TEC(106/cumm)	1.79±0.08**	1.36±0.05**
TLC(103/cumm)	17.21±1.19	14.31±0.84
Hb(g/dl)	11.97±0.17	11.8±0.59
PCV (%)	37± 2.25	36.71±1.86
ESR(mm/hr)	1.3± 0.04*	1.09±0.06*
Heterophil (%)	63± 2.16	63.43±2.13
Lymphocyte (%)	31.57±2.25	32.71±1.80
Eosinophil (%)	2.71±0.36	2.29±0.36
Basophil (%)	1± 0.31	0.71±0.29
Monocyte (%)	1.71±0.36	0.86±0.34

1. Values are Mean ± S.E. 2. * -Significant difference between groups(p<0.05)
 3. ** -Significant difference between groups(p<0.01)

(P<0.01) higher values of TEC and ESR in male than in female emus are consistent with previous findings in birds, that matured males generally have higher TEC and ESR values than females. This rise in blood parameters has been attributed to the hormone androgen, which stimulates erythropoiesis and increases the number of circulating erythrocytes (Balash et al., 1973; Sturkie, 1986). and, consequently, TEC and ESR in birds. Similarly, the values of PCV in male Emus are slightly higher than in female Emus, although not statistically significant. Other parameters like TLC and Hb do not show significant difference in male and in female. Leucocytes show the same pattern of distribution in both the sexes.

References

- Balash, J., et.al. (1973): Poul. Sci. 52: 1531-1534.
- Cenk Aydin ,Ibrahim Ak, Nurten Galip and Sible Nadjia Zaugg, (2004): Ind. Vet. Jour. 81:294.
- Okatie-Eboh, G., Bailey, C.A., Hicks, K.D. and Kubena, L.F.(1989): Am.J.Vet.Res., 53:1765.
- Ravindra Reddy Y.et.al. (2003): Ind. Vet. Jour., 80:1308-1309.
- Schalm, O.W., Jain, N.C., and Carrot, F.J. (1975): Veterinary heamatology, 3rd edn, Lee and Febiger, Philadelphia.
- Shendare, R.C., Gongale, M.A., Rajput, A.B. and Mandekar, S.M. (2007):Veterinary World. 5(9):303-304.
- Sturkie, P. D. (1986): Avian Pathology. Springer - Verlag, New York.

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