

**INFLUENCE OF SEX ON HAEMATOLOGICAL INDICES OF
GROWER EMU BIRDS (*DROMAIUS NOVAEHOLLANDIAE*)
UNDER FARMED CONDITIONS**

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Abstract: Emus (*Dromaius novaehollandiae*) are the second largest members of the flightless birds belonging to the order ratites and a native of Australia. They are bred globally for their iron rich red meat, eggs, hide and oil used for therapeutic and cosmetic purposes. There is very little information available on the haematological parameters of grower emu birds in India. Hence, a study was conducted to evaluate the haemogram of grower birds reared at Regional Research Centre, Pudukottai and commercial farm in Tamil Nadu. Blood samples were collected from apparently healthy, thirty (15 male and 15 female) emu birds aged between one and a half to two years in heparin coated tubes. The haematological parameters such as haemoglobin, packed cell volume, total erythrocyte count, thrombocyte count, total leucocyte count and differential count were evaluated as per the standard procedure. The data were analyzed statistically by one way Anova using SPSS software. No significant differences between the sexes were observed in the haemogram except in the differential count where a significantly higher percentage of heterophils in the male and lymphocytes in the female emu birds were observed. The haematological indices evaluated may be of a great value to the veterinarians in the early diagnosis of disorders and diseases of the emu.

Keywords: Haematology, grower emus, male, female.

Introduction

Emus (*Dromaius Novaehollandiae*) are exotic flightless birds reared primarily for meat, leather and oil. In India, emu rearing is increasingly becoming popular due to the pharmaceutical properties of emu oil which is rich in skin nourishing fatty acids including oleic, linoleic and linolenic acid. The hematological parameters are routinely used to determine the health status of the body and to reveal stress created by various reasons such as environmental, nutritional and pathological factors. These parameters are also influenced by species, age, sex, season, geographical area, diet and physiological status. As scanty

information is available in the haematological parameters of emu grower birds of different sexes an attempt was made in this study to estimate the influence of sex on haematological parameters of emu grower birds.

Materials and Method

The study was conducted in emu birds maintained at Regional Research Centre, Pudukottai, TANUVAS and commercial farm in Tamil Nadu. The birds were reared under intensive system with standard management practices. Blood samples were collected from apparently healthy, thirty (15 male and 15 female) emu birds aged between one and a half to two years in the morning hours. About 1 ml of blood was collected from the right jugular vein (Reddy *et al.*, 2003) of each bird in heparin coated tubes for haematological estimation. The haematological parameters such as haemoglobin, packed cell volume, total erythrocyte count, thrombocyte count and total leucocyte count were analyzed as per the standard procedure. Blood smears were also prepared to carry out differential leucocyte count (DC).

Statistical Analysis

The data were subjected to one – way analysis of variance (ANOVA) and post hoc analysis were carried out using Duncan's test for multiple comparisons using SPSS software version 20 for windows.

Results and Discussion

The influence of sex on haematological parameters in the growers is presented in the Table 1.

Influence of sex on Haemoglobin

The overall mean haemoglobin concentration in the emu grower birds was 13.69 ± 0.57 g/dl. The mean Hb concentration observed in the male and female emu grower birds in the present study showed no significant differences between them. Patodkar *et al.* (2008) observed no significant difference between the sexes similar to the present report, but recorded a lower haemoglobin concentration of 11.97 ± 0.17 g/dl and 11.8 ± 0.59 g/dl in male and female eighteen months old emu birds, whereas Sabino *et al.* (2011) reported a significantly lower haemoglobin concentration in female ostriches of less than thirteen months old.

Influence of sex on Packed Cell Volume (PCV)

The overall mean PCV concentration in the emu grower birds was 36.37 ± 1.36 %. In the present study, there was no significant difference between the sexes in the growers and the values were in agreement with the findings of Patodkar *et al.* (2008) in the eighteen months old emu birds.

Influence of sex on Total Erythrocyte Count (TEC)

The overall mean TEC in the emu grower birds was $1.75 \pm 0.06 \times 10^6/\mu\text{l}$. The average TEC value noticed in the male and female birds in the grower birds of the present study was in agreement with the findings of Patodkar *et al.* (2008) in the emu. There was no significant difference in the TEC between the male and female grower emu birds.

Influence of sex on Thrombocyte count

The overall mean thrombocyte count in the emu grower birds was $23.04 \pm 0.31 \times 10^3/\mu\text{l}$. In present investigation, the overall average value of thrombocyte count was within the range reported by Bonadiman *et al.* (2009) in ostriches. Both the male and female emu growers indicated no significant differences in the thrombocyte count.

Influence of sex on Total Leucocyte Count (TLC)

The overall mean TLC in the emu grower birds was $17.07 \pm 0.33 \times 10^3/\mu\text{l}$. There was no significant difference noticed between the sexes in the TLC of growers. The present findings are in agreement with that of Patodkar *et al.* (2008) in the eighteen months old emu birds.

Influence of sex on Differential Count (DC)

In the present study, there was a significant difference in the heterophils and lymphocytes noticed between the sexes in the grower birds. The heterophils were significantly higher ($P < 0.01$) in the grower male emu birds than the female emus. Similar findings were reported by Okeudo *et al.* (2003) in the ducks. On the other hand a contradictory report was observed by Kumar *et al.* (2009) wherein the lymphocytes were significantly higher in the male emu birds. Patodkar *et al.* (2008) in the emu and Bonadiman *et al.* (2009) in the ostriches did not observe any significant difference between the male and female birds.

Conclusion

The present study serves as a tool for establishing baseline values in the male and female grower emu birds and aids the veterinarian in assessing the health status of the grower birds.

References

- [1] Bonadiman, S. F., Stratievsky, G. C., Machado, J.A., Albernaz, A.P., Rabelo, G.R and Damatta, R.A. 2009. Leukocyte ultrastructure, haematological and serum biochemical profiles of ostriches (*Struthio camelus*). *Poult. Sci.*, 88: 2298-2306.
- [2] Kumar, B.K., Swapna. E., Lakshman, M., Rajashekar Reddy, V and Ravindra Reddy, A. 2009. Haemato-biochemical observations in emu (*Dromaius novaehollandiae*). *Indian. J. Vet. Path.*, 33 (2): 238-239.

- [3] Okeudo, N.J., Okoli, I.C and Igwe, G.O.F. 2003. Haematological characteristics of ducks (*Cairina moschata*) of southeastern Nigeria. *Tropicultura*. 21 (2): 61-65.
- [4] Patodkar, V.R., Somkuwar, A.P., Rahane, S.D., Shejal, M.A and Belhekar, D.R. 2008. Effect of sex on hematological parameters in emu (*Dromaius novaehollandiae*). *Vet. World*. 1(6): 171-172.
- [5] Reddy, Y.R., Viroji Rao, S.T., Veerabrahmaiah, K., Satishkumar, K and Shakila, S. 2003. Haematological parameters of emu, *Indian. Vet. J.* 80: 1308 – 1309.
- [6] Sabino, A.J., Trevelin, S.C., Almeida, B.F.M., Peiro, J.R and Ciarlini, P.C. 2011. Erythrogram and erythrocytes measurement of ostriches (*Struthio camelus*) in Sao Jose do Rio Preto – SP, Brazil. *J. Vet. Pres. Anim, Sci.*, 48 (3): 234 – 238.

Table 4. Influence of sex on hematological parameters in growers of 1 - 2 years of age

Sex	Hb (g/dl)	PCV (%)	TEC (x10⁶/μl)	Thrombocyte count (x10³/μl)	TLC (x10³/μl)	Heterophils (%)	Lymphocytes (%)	Eosinophils (%)
Male (n = 15)	13.41 ± 0.90 ^a	35.93 ± 1.93 ^a	1.77 ± 0.07 ^a	23.28 ± 0.53 ^a	16.64 ± 0.44 ^a	70.67 ± 0.44 ^{a**}	27.13 ± 0.50 ^a	2.13 ± 0.20 ^a
Female (n = 15)	13.96 ± 0.73 ^a	36.80 ± 1.99 ^a	1.73 ± 0.10 ^a	22.81 ± 0.33 ^a	17.50 ± 0.48 ^a	67.20 ± 0.58 ^b	30.33 ± 0.52 ^{b**}	2.53 ± 0.17 ^a
Pooled Mean ± SE (n = 30)	13.69 ± 0.57	36.37 ± 1.36	1.75 ± 0.06	23.04 ± 0.31	17.07 ± 0.33	68.93 ± 0.48	28.73 ± 0.46	2.33 ± 0.22

** - Highly significant (P < 0.01)

Mean values having same superscript within a column do not differ significantly