The Pharma Innovation Journal 2023; 12(6): 4296-4298

www.ThePharmaJournal.com

The Pharma Innovation

ISSN (E): 2277-7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2023; 12(6): 4296-4298

www.thepharmajournal.com
Received: 08-03-2023
Accepted: 13-04-2023

V Thavasiappan
Veterinary College and Research Institute, Tamil Nadu Veterinary and Animal Sciences University, Tirunelveli, Tamil Nadu, India

P Visha
Veterinary College and Research Institute, Tamil Nadu Veterinary and Animal Sciences University, Salem, Tamil Nadu, India

R Anilkumar
Directorate of Distance Education, Tamil Nadu Veterinary and Animal Sciences University, Chennai, Tamil Nadu, India

Corresponding Author:
V Thavasiappan
Veterinary College and Research Institute, Tamil Nadu Veterinary and Animal Sciences University, Tirunelveli, Tamil Nadu, India

Haematological characteristics of nondescript domestic geese (*Anser anser*) at different ages and sexes

V Thavasiappan, P Visha and R Anilkumar

Abstract
The present study was carried out to determine the haematological characteristics of nondescript domestic Geese (*Anser anser*) at different age and sexes available at the Sheep Breeding Research Station (SBRS), Sandynallah, Nilgiris district, Tamil Nadu. Sixty apparently healthy geese reared in semi intensive system under deep litter sheds of 1 month to 12 years age (30 male and 30 female) were randomly grouped in to five groups of 6 birds for each sex, viz. 1-2 months, 2 - 24 months, 2-5 years, 5-9 years and 9–12 years. The birds were allowed for grazing for 6 hours and fed concentrate @ 100 g/bird/day which was fed in the morning and evening. The data from the birds were collected on three consecutive days. Blood was collected from the wing vein before feeding. Each bird was manually restrained. The mean PCV, haemoglobin and TEC were significantly (p<0.05) higher in females compared to males at 1 to 2 months and 2 to 5 years. However these parameters did not significantly between males and females of the age groups 2 months to 2 years, 5 to 9 years and 9 to 12 years. The mean values of TLC was significantly (p<0.05) higher in males at all the age groups. No significant differences were observed in the erythrocyte indices and differential leukocyte counts between sexes in the any of the age groups. The present study evaluated the haematological values at different ages and sexes in the nondescript domestic geese. The results of this study indicated that different ages and sexes had a significant effect on PCV, haemoglobin, TEC and TLC but did not show any significant difference between the males and females in any of age group of birds in the erythrocyte indices, MCV, MCH, and MCHC.

Keywords: Nondescript domestic geese, different age and sex, high altitude, haematological values

Introduction
Physiological indices in birds are influenced by factors such as the physiological state of the bird, species, age, sex, nutritional status, and seasonal changes and prevailing conditions in a particular geographic area (Eren *et al*. 2006; Raukar *et al*. 2007) [2, 4]. Presently there is a dearth of information on the haematological indices of nondescript domestic geese in India in relation to age, sex, physiological status and husbandry practices. Knowledge on the levels of these indices in the blood of the geese would serve as a useful aid in the diagnosis of diseases, provide understanding of the physiology and adaptation of the species to environmental conditions as well as improve its production performance. This may eventually contribute to the success of geese farming in India.

Materials and Methods
The present study was carried out on the nondescript domestic Geese (*Anser anser*) available at the Sheep Breeding Research Station (SBRS), Sandynallah, Nilgiris district, a unit of TANUVAS, Chennai. Sandynallah is a hilly tract located at a height of 2230 meters above the mean sea levels having an average rain fall of 800 to 3000 mm and average maximum temperature 23-27 °C and minimum 0 to 5 °C and relative humidity 60-75%.
In the present study, sixty apparently healthy nondescript domestic geese of 1 month to 12 years age (30 male and 30 female) were randomly grouped in to five groups of 6 birds for each sex, viz. 1-2 months, 2 - 24 months, 2-5 years, 5-9 years and 9–12 years. All the birds were reared in semi intensive system under deep litter sheds. Birds were raised in natural light and temperature and supplied with water *ad libitum*. They were fed concentrate @ 100 g/bird/day which was fed in the morning and evening. The birds were allowed grazing in paddocks having ponds for 6 hours daily (0900 to 1200 and 1400 to 1900h). The data from the birds were collected on three consecutive days. The average maximum and minimum temperature during the experimental period was 25 °C and 16 °C and relative humidity was 70%.

Blood samples were collected from the wing vein of the birds and blood smears were prepared before feeding. Each bird was manually restrained. Total erythrocyte count (TEC) and total leukocyte count (TLC), differential leukocyte count and packed cell volume (PCV) were estimated using standard procedures (Sturkie, 1986) [5]. Heamoglobin concentration was measured by the cyanomethaemoglobin method (Hunsaker *et al*., 1964) [3]. From the haematological values, the erythrocyte indices viz. mean corpuscular volume (MCV), mean corpuscular haemoglobin (MCH), and mean corpuscular haemoglobin concentrations (MCHC) were calculated (Sturkie, 1976) [5]. Blood smears were stained with giemsa stain.

Results and Discussion

The mean values of PCV, haemoglobin, TEC, MCV, MCH, and MCHC are presented in the Table 1. The mean PCV and haemoglobin were significantly ($p<0.05$) higher in females compared to males at 1 to 2 months and 2 to 5 years. However there was no significant difference in the PCV and haemoglobin of males and females of the age groups 2 months to 2 years, 5 to 9 years and 9 to 12 years. The mean TEC was significantly ($p<0.05$) increased in females compared to males at 1 to 2 months and at 2 to 5 years age but there was no significant difference in the 2 months to 2 years, 5 to 9 years and 9 to 12 years age groups. The erythrocyte indices did not show any significant difference between the males and females in any of age group of birds.

The mean values of TLC was significantly ($p<0.05$) higher in females compared to males (table 2) at all the age groups. However, there was no significant difference in the differential leukocyte counts between sexes in the any of the age groups.

Table 1: Effect of age and sex on hematological variables (means±SE) in nondescript domestic Geese

Age	Sex	PCV (%)	Haemoglobin (g/dL)	TEC (x10^6/µL)	MCV (fL)	MCH (pg)	MCHC (g/dL)
1 to 2 months	Male	43.50±0.92*	14.60±0.30*	7.32±0.14*	59.45±0.24	19.95±0.12	33.56±0.12
	Female	44.83±1.19*	14.97±0.39*	7.58±0.19*	59.12±0.30	19.74±0.18	33.39±0.18
	Overall	44.17±0.74	14.78±0.24	7.45±0.12	59.28±0.19	19.85±0.11	33.48±0.11
2 months to 2 years	Male	43.17±1.19	14.45±0.38	7.24±0.23	59.66±0.41	19.98±0.20	33.48±0.12
	Female	42.83±1.42	14.57±0.40	7.32±0.24	58.57±0.59	19.93±0.15	34.04±0.25
	Overall	43.00±0.88	14.51±0.26	7.28±0.16	59.11±0.38	19.95±0.12	33.76±0.15
2 years to 5 years	Male	41.83±1.13*	14.12±0.36*	7.17±0.17*	58.36±0.25	19.70±0.06	33.75±0.05
	Female	48.00±0.51*	15.95±0.11*	8.15±0.07*	58.90±0.34	19.57±0.06	33.24±0.15
	Overall	44.92±1.10	15.03±0.33	7.66±0.17	58.63±0.21	19.63±0.04	33.49±0.11
5 years to 9 years	Male	35.67±1.42	12.12±0.35	6.15±0.22	57.98±0.75	19.73±0.22	34.04±0.39
	Female	36.83±1.07	12.50±0.30	6.25±0.16	58.92±0.33	20.01±0.12	33.96±0.21
	Overall	36.25±0.87	12.31±0.23	6.20±0.13	58.45±0.41	19.87±0.13	34.00±0.21
9 years to 12 years	Male	39.67±0.84	13.17±0.09	7.07±0.08	56.12±0.82	18.64±0.14	33.25±0.50
	Female	38.67±1.38	13.00±0.15	7.03±0.12	54.89±0.98	18.49±0.12	33.76±0.80
	Overall	39.17±0.78	13.08±0.09	7.05±0.07	55.50±0.63	18.57±0.09	33.51±0.46

* Mean values between sexes of different age groups differ significantly ($p<0.05$)

Table 2: Effect of age and sex on total and differential leukocyte count (means±SE) in nondescript domestic Geese

Age	Sex	TLC	Heterophil (%)	Lymphocyte (%)	Monocyte (%)	Esinophil (%)	Basophil (%)
1 to 2 months	Male	20.12±0.17*	42.00±1.00	51.17±1.16	4.83±0.30	1.17±0.16	0.67±0.33
	Female	22.27±0.36*	43.50±0.76	9.50±0.50	5.17±0.70	1.00±0.25	0.83±0.30
	Overall	21.20±0.37	42.75±0.64	50.33±0.65	5.00±0.36	1.08±0.14	0.75±0.21
2 months to 2 years	Male	20.15±0.20*	45.33±0.61	48.00±0.68	4.17±0.60	1.33±0.33	1.17±0.30
	Female	22.45±0.26*	44.67±1.08	50.83±1.72	4.33±0.55	1.33±0.33	0.50±0.34
	Overall	21.30±0.38	45.00±0.60	49.42±0.98	4.25±0.39	1.33±0.22	0.83±0.24
2 years to 5 years	Male	21.37±0.36*	46.83±0.79	47.00±0.68	4.33±0.71	1.17±0.30	1.00±0.00
	Female	22.78±0.29*	45.33±1.14	48.17±1.37	4.67±0.71	1.33±0.33	0.50±0.34
	Overall	22.08±0.30	46.08±0.70	47.58±0.75	4.50±0.48	1.25±0.21	0.75±0.7
5 years to 9 years	Male	20.84±0.38*	49.50±1.14	45.83±0.79	3.17±0.54	0.67±0.21	0.83±0.16
	Female	22.78±0.47*	46.00±1.50	46.83±2.00	4.67±1.17	1.33±0.33	1.17±0.16
	Overall	22.81±0.41	47.75±1.04	46.33±1.03	3.92±0.65	1.00±0.21	1.00±0.12
9 years to 12 years	Male	20.99±0.55*	48.50±1.08	37.33±1.45	8.67±0.55	2.67±0.66	2.83±0.54
	Female	22.66±0.14*	47.67±0.66	37.00±1.06	9.67±0.33	2.83±0.60	2.83±0.74
	Overall	21.83±0.37	48.08±0.62	37.17±0.86	9.17±0.34	2.75±0.42	2.83±0.44

* Mean values between sexes of different age groups differ significantly ($p<0.05$)

The Hb and PCV levels indicate the nutritional status of animals (Aikhumobhogbe and Orheruata, 2006) [1]. In the present study, the Hb, PCV and TEC levels were significantly ($p<0.05$) increased in females compared to males in 1 to 2 months and 2 years to 5 years of age but without significant difference in 2 months to 2 years, 5 to 9 years and 9 to 12 years age. The results of the present study were similar to that of Hunsaker *et al*., (1964) [3] who observed that female geese had higher erythrocyte values than the males.

According to Raukar *et al.* (2007) [4] haematological indices such as MCV, MCH and MCHC are important indicators in the determination of morphological characteristics of anaemia and that MCV may be an indicator of the haematopoietic activity. In the present study, the mean MCV, MCH, and MCHC did not differ significantly between males and females in any of the age groups indicating haemopoietic activity was influenced either by sex or age of the geese.

Conclusion

The present study evaluated the haematological values at different ages and sexes in the nondescript domestic geese. The results of this study indicated that different ages and sexes had a significant effect on PCV, haemoglobin, TEC and TLC but did not show any significant difference between the males and females in any of age group of birds in the erythrocyte indices, MCV, MCH, and MCHC.

Acknowledgement

The authors thank the Sheep Breeding Research Station (SBRS), Sandynallah, Nilgiris district, a unit of TANUVAS, Chennai for permitting the use of nondescript domestic Geese for the study. The authors are also grateful to Department of Veterinary Physiology, Veterinary College and Research Institute, Namakkal for measuring the haematological parameters.

References

1. Aikhuomobhogbe PU, Orheruata AM. Haematological and blood biochemical indices of West African dwarf goats vaccinated against Pestes des petit ruminants (PPR). African J Biotech. 2006;5(9):743-748.
2. Eren M, Cam Y, Uyanik F, Atalay O. Some blood biochemical parameters in flamingos. Revue Med. Vet. 2006;157(5):277-279.
3. Hunsaker WG, Hunt JR, Aitken JR. Physiology of the growing and adult goose. 1. Physical characteristics of blood. Br. Poult. Sci. 1964;5:257-262.
4. Raukar J, Simpraga M, Zadro R, Luzar-Stiffler V. Haematological status of one day old ostriches (*Struthio camelus domesticus*). Acta Vet (Beograd). 2007;57:231-239.
5. Sturkie PD. Body fluids: Blood in Avian Physiology 4th ed. Springer-Verlag, New York, USA; c1986, p. 102-129.