

Haematological Constituents of Blood of Gaolao Cattle

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Abstract

The hematological studies of Gaolao cattle (10 animals each of calves, heifers and cows) showed that values of hemoglobin, total erythrocyte count, packed cell volume and lymphocytes were low in cows than calves and heifers while low eosinophil per cent in calves and heifers than cow were observed.

Keywords: Haematological Constituents, Blood, Gaolao, Cattle, Indigenous breed.

Introduction

The haematological values of many indigenous breed of cattle have been reported during the last three-four decades (Mullick and Pal, 1942; Pal *et al.*, 1945; and Kehar and Murthy, 1951; Sagar, 1962; Patel *et al.*, 1965; Sharma and Satish Chander, 1970; Pandey and Pal, 1971; Talvelkar *et al.*, (1980). The information on Gaolao cattle is not available. The present study was undertaken for ascertaining the normal hematological constituents of Gaolao cattle with reference to age groups.

Material and Methods

The Gaolao cattle of "Government Cattle Breeding Farm, Hetikundi, Dist. Wardha", of the various age groups calves (birth to 12 months), heifers (1 years to 3 years) and adult cows (above 3 years) were selected for the study. There were 10 healthy animals in each group.

Blood samples were collected in the morning hours, from jugular vein in sterile test tube containing E.D.T.A. (1 mg per ml of blood) and were analyzed

immediately for hemoglobin, total erythrocyte numbers, packed cell volume, MCV, MCH, MCHC, total leucocytes and differential leucocyte count.

Hematological parameters were studied using standard procedures described by Wintrobe (1960) and Schalm *et al.* (1975).

Result and Discussion

Hb, erythrocytes and PCV: The mean \pm SE value of Hb, Erythrocytes and PCV in Gaolao calves, Heifers and cows are presented in the table. The mean Hb and Erythrocytes number in Gaolao calves, heifers in the present study are higher than in adult Gaolao cows. Mullick and Pal (1942) reported higher values in Hariana calves (Hb=14.6 gm% and Erythrocytes=11.6 million/cumm). Kusner (1942) also recorded higher Hb and Erythrocytes number in Dhaghestan calves than in adult cows. These observations are in agreement with the present study. The mean PCV in Gaolao calves, Heifers and cows in present study are within the range reported by Murty and Kehar (1952) in Kumaoni cattle

Table-1. Hematological values of different age groups in Gaolao cattle (Mean \pm S.E.)

Blood Entities	Calves	Heifers	Adult cows	Average Breed values
Hb (gm %)	14.22 \pm 0.55	11.68 \pm 0.47	10.88 \pm 0.47	12.26 \pm 0.67
TEC (10^6 /cumm)	10.80 \pm 0.19	10.6 \pm 0.43	08.49 \pm 0.40	09.78 \pm 0.46
PCV (%)	14.90 \pm 1.62	33.10 \pm 1.22	28.10 \pm 1.22	32.03 \pm 1.39
MCV (cu μ)	32.42 \pm 1.16	33.08 \pm 0.90	33.07 \pm 1.31	32.86 \pm 0.53
MCH (μ gm)	13.18 \pm 0.55	11.66 \pm 0.35	13.08 \pm 0.94	12.64 \pm 0.42
MCHC (%)	41.27 \pm 2.53	35.08 \pm 1.01	39.60 \pm 2.65	38.65 \pm 0.53
TLC (10^3 cumm)	07.37 \pm 0.45	08.85 \pm 0.46	06.52 \pm 0.29	07.58 \pm 0.68
Lymphocytes (%)	71.40 \pm 1.51	66.20 \pm 2.09	63.20 \pm 1.20	66.93 \pm 2.39
Neutrophils	23.40 \pm 1.37	27.40 \pm 2.21	27.90 \pm 1.84	26.23 \pm 1.42
Monocytes (%)	1.40 \pm 0.31	2.20 \pm 0.39	2.00 \pm 0.29	1.87 \pm 0.24
Basophils (%)	0.20 \pm 0.13	0.20 \pm 0.13	0.30 \pm 0.15	0.23 \pm 0.03
Eosinophils (%)	3.70 \pm 0.54	4.00 \pm 0.39	5.20 \pm 0.57	4.30 \pm 0.46

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(24.6%- 46.2%). Sagar (1962) reported slightly lower Hb contain in Red Sindhi calves (9.42 gm%) and cows (9.36 gm%) than the present study. Mullick and Kehar (1952) reported Hb (10 ± 0.62 gm%) in Indian cattle. Patel *et al.* (1965) recorded slightly lower erythrocytes number (8.00 ± 0.35), (7.2 ± 0.32), (6.70 ± 0.24) in Gir calves, heifers and cows, respectively. These differences in haematological values could be due to nutritional, managemental and environmental factors (Talvelkar *et al.*, 1980).

MCV, MCH, MCHC: The mean (\pm SE) MCV, MCH, MCHC values in Gaolao calves heifers and cows are given in the table. The mean MCV values in calves are slightly lower than cows in present study. MCV recorded in calves (41.1 cu μ) by Bhalla *et al.* (1964) and in cows (47.20 ± 2.9 cu μ) by Pal *et al.* (1945). The mean MCH values in Gaolao calves, heifers and cows in the present study are within the range (12.90 ± 0.75 μ gm) reported by Pal *et al.* (1945). The mean average breed MCHC in Gaolao cattle is higher than $27.4 \pm 1.67\%$ reported by Murty and Kehar (1952). These variations could be attributed to nutritional environmental factors.

Leucocytes and differential count: The mean leucocyte number and differential counts in Gaolao cattle is given in the Table 1. From the table the average total leucocytes count in Gaolao cattle is in agreement with the values reported by Murty and Kehar (1952) in Kumaoni ($8.40 \pm 0.33 \times 10^3$ /cumm), Hariyana (7.7×10^3 /cumm) and Dhanni (8.0×10^3 /cumm) cows. Patel *et al.* (1965) and Mullick and Pal (1942) recorded higher total leucocytes number in Gir and Hariyana calves than in adult cows, respectively. The wide variations in leucocyte number could be due to age, temperature, physiological stress and parasitic infestation (Tavelkar *et al.*, 1980). The mean values of lymphocytes and neutrophils in the present study in Gaolao cattle are within the range reported by Sharma *et al.* (1973) in Indian cattle (Lymphocytes $68.33 \pm 0.63\%$ and neutrophils 22.66

$\pm 8.62\%$). The mean monocyte percent in Gaolao cattle is in agreement with Talvelkar *et al.* (1980). From the table it is seen that mean eosinophilic percent in Gaolao cows is higher than calves and heifers. These values are in agreement with Patel *et al.* (1965) in Gir cows ($7.00 \pm 0.7\%$), calves ($4.00 \pm 0.3\%$) and heifers ($5.00 \pm 0.40\%$).

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