MORPHOMETRIC STUDY OF BLOOD CELLS OF INDIAN ELEPHANTS (*ELEPHUS MAXIMUS*)

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Indian Elephants are found in many sanctuaries in India. They are scattered throughout the country at various religious places and with the forest departments as work animals. Meager information is available on the biometry and other morphological characters of blood forming cells of these elephants. Keeping this in mind an attempt was made to describe some of the morphological characteristics of blood cells of captive Indian Elephants.

Twelve healthy Indian Elephant females ranging from 20 to 45 years of age were selected for the study. All the animals belonged to various religious centres of Indian states. Blood samples were collected from ear vein under aseptic conditions, smears were prepared, fixed with ethanol and stained with Haematoxylin-Eosin stain. The smears were examined under oil immersion lens (100X), using graduated eyepiece (10X). The cells were identified by their morphological and staining characteristics as described by Jain (1986) for domestic animals. From the stained blood smear of each animal, 50 erythrocytes, 20 neutrophils, 20 lymphocytes, 10 eosinophils and 10 monocytes were measured and recorded. The diameter of individual cells was measured at two points (shortest and longest diameter) and the average was considered as the cell diameter. Statistical calculations like mean, standard error (S.E.) and coefficient of variance (C.V.) were evolved as per Snedecor and Cochran (1967).

Size of various blood cells of Indian elephants is given in Table 1.
Erythrocytes: Average diameter of erythrocyte was found to be 8.66 + 0.11µm, which was slightly smaller in size than as reported by Schmidt (1986). The stain was dark in the center and at peripheral part whereas ring like zone between two dense area was light in colour. This may be due to more thickness in dense area and less in light area. The Rouleaux formation was also evident in blood smear of elephant.

Neutrophils: The diameter of neutrophils was ranging from 11.03 to 14.28µm with an average of 12.28 + 0.17µm. The neutrophils having multilobulated nucleus. The lobes were ranging between two to five in numbers. Cytoplasm was containing darkly stained granules.

Lymphocytes: The average diameter of lymphocyte was found to be smallest of white blood cells with a mean diameter of 10.22 + 0.29µm. The cells contained either large single nucleus leaving thin periphery of cytoplasm or had a bilobed nucleus with comparatively more amount of cytoplasm.

Eosinophils: The diameter of the eosinophils was the largest of blood cells of elephant. The diameter of eosinophil was ranging from 11.00 to 18.7µm, with an average of 16.59 + 0.29µm. Almost all the eosinophils were containing many small cytoplasmic vacuoles. Nucleus mostly having two lobes and rarely three lobes joint to gather by thin strand of chromatin.

Monocytes: Monocytes were second largest cell observed of elephant blood cells. The monocytes were large cells having large round nucleus, with more proportion of cytoplasm as compared to lymphocyte. The average diameter of monocytes was 14.65 + 0.26µm.

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Table 1. Mean diameter of blood cells of Indian Elephant

Blood Cells	Range (µm)	Mean (µm)	SE	CV %
Erythrocyte	5.5 – 9.9	8.66	0.11	7.43
Neutrophil	9.9 – 15.4	12.77	0.17	8.16
Lymphocyte	7.7 – 14.1	10.22	0.17	9.75
Eocinophil	11 – 18.7	16.59	0.29	10.66
Monocyte	11 – 17.6	14.65	0.26	10.58

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