

STUDIES ON HAEMATOLOGICAL VALUES IN TIGERS *PANTHERA TIGRIS*

B.M. Chandranaik, Shashidar Bellary, Dilip Das, C. Renukprasad and G. Krishnappa

Wild Animal Disease Diagnostic Laboratory, Institute of Animal Health and Veterinary Biologicals, Hebbal, Bangalore, Karnataka 560024, India.

This Note gives a detailed blood picture of tigers (*Panthera tigris*) maintained at Bannerghatta Biological Park (BBP), Bangalore. As not much data is available on this subject we hope that this study will help in diagnosis of disease conditions in which the normal values deviate.

Five to 10ml of blood was collected from coccygeal vein of 30 tigers (20 females and 10 males) maintained in captivity using 20 gauge vacuutainers. The animals were physically restrained in squeeze cages with out using any anesthetics. The blood was collected from the animals during the morning hours between 0900 and 1000hr.

Haemoglobin (Hb) concentration in the blood was determined by acid hematin method using Sahlis haemoglobinometer. Red blood cell (RBC), white blood cell (WBC), differential leukocyte count (DLC) using Giemsa stain, packed cell volume (PCV), calculations of mean corpuscular volume (MCV), and mean corpuscular haematocrit concentration (MCHC) were done as per the procedures and formulae outlined by Benjamin (1998). The present work was carried out at Wild Animal Disease Diagnostic Laboratory (WADDL), Institute of Animal Health and Veterinary Biologicals, Bannerghatta, Bangalore.

The average values and the range of values obtained during the study along with the normal values in tigers cited by other workers (Joshi, 1991; Jacobs & Lumsden, 1995) are detailed in Table 1. In majority of the animals the Hb level was more than 13g%, and the population average was more than the highest range of 15g% for these animals which could be attributed to feeding schedule for these animals which contributes for constant fasting and dehydration (Benjamin, 1998).

RBCs lacked the discernible pale centers on blood smear examination and mild degree of anisocytosis was recorded during the study. RBC count in animals ranged between 6.1 to 12.6 x 10⁶/μl with the mean value at 8.7 x 10⁶/μl.

The average PCV value was 52.12, which is much above the normal values, and this is further attributed to the feeding pattern and dehydration, in similar lines with Hb concentration. MCV indicates the average volume of the individual erythrocyte and is expressed in Femoliters (fl), and some animals had higher MCV values, which could be due to some deficiencies of haematopoietic factors or age related factors (Benjamin, 1998). MCHC, which gives the concentration of Hb in erythrocyte was about 33.3g% which is within the normal range. This is because the erythrocyte cannot be supersaturated with Hb and any variation in size of the RBC is accompanied by corresponding variation in Hb content so that MCHC remains within the normal range.

In majority of the animals the WBC, values were nearing the highest range of the values this may be caused in part by higher percentage of leucocyte in the marginated pool (around 70%), where in the increased blood flow caused by anxiety shifts these marginated leucocytes to the circulating pool, resulting in higher and more variable TLC and DLC (Kenneth *et al.*, 2000). Neutrophils had segmented nuclei with condensed chromatin and non-staining cytoplasm. Eosinophils were larger than neutrophils and had bilobulated nuclei with orange stained cytoplasm. The basophils were smaller than eosinophils with pale lavender pink stained cytoplasmic granules. Lymphocytes were smaller than neutrophils, with basophilic cytoplasm. The morphological picture of leucocytes during the study was in accordance with previous works in other felines (Kenneth *et al.*, 2000). As the population under study comprised tigers of different age groups, the range of values obtained for these animals may give a better understanding since the average values tend to deviate from the normal values.

REFERENCES

- Benjamin, M.M. (1998).** *Outline of Veterinary Clinical Pathology*. 3rd Edition. Iowa State University Press, Ames, USA.
- Jacobs, R.M. and J.H. Lumsden (1995).** Canine and feline reference values, pp.1395-1417. In: Bonagura, J.D., R.W. Kirk. *Current Veterinary Therapy XII*. WB Saunders, Philadelphia.
- Joshi, B.P. (1991).** *Wild Animal Medicine*. Oxford and IBH, New Delhi.
- Kenneth, D., Clinkenbeard and H.M. James (2000).** Normal Haematology of the Cat, pp.1064-1068. In: *Schalms Veterinary Haematology*. 5th Edition. Lea and Febiger, Philadelphia.



Table 1. Values of different haematological parameters

	Hb g%	RBC x 10 ⁶ /μl	PCV %	MCV (fl)	MCHC g%	TLC x 10 ⁹ /μl	DLC (%)				
							N	L	E	M	B
Normal value	8-15	5-10	24-45	40-55	32-36	12.3	76.5	21	1	2	0
Mean value	15.7 (9.2-22.4)	8.7 (6.1-12.6)	52.12 (26.4-72.3)	56.8 (34.1-71.3)	33.3 (33.3)	11.9 (5.1-14.4)	64.3 (50-78)	32.7 (21-40)	2.6 (1-4)	0.82 (0-2)	0.3 (0-1)

Values in parenthesis indicate the range of values obtained during the study.