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BLOOD CHARACTERISTICS OF THE AFRICAN ELEPHANT *(Loxodonta africana cyclotis)*

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Abstract: Mean corpuscular volume, hematocrit, hemoglobin concentration and red and white cell counts from five domesticated African elephants were measured. The results obtained are tabulated and compared with those from shot and chemically immobilized African elephants.

INTRODUCTION

Blood samples rarely are obtained from African elephants which have not either been shot or chemically immobilized. Indeed, most of the published values for blood parameters of wild animals have been derived from specimens collected from subjects which were under stress from one or other of these causes.[1-4]

The blood and physiological parameters reported in this paper were obtained from five domesticated elephants of the forest race *(Loxodonta africana cyclotis),* held at the African Elephant Training Centre by the Institut Zairois pour la Conservation de la Nature (IZCN) at Gangala na Bodio in north eastern Zaire.

MATERIALS AND METHODS

Nine captive elephants were held at Gangala na Bodio in April, 1976. All were in good health and free from clinical signs of infectious disease. These elephants represent the only group of domesticated African elephants in the world. Almost all were captured when five to eight years old (two were born in captivity) and had been in captivity for 19 to 50 years. Their diet consisted of local vegetation and since the animals were chained at night, much time was spent gathering or transporting fodder for consumption while restrained. Heparinized blood samples were taken from the auricular veins of five of the elephants. Collection of blood from the remaining four animals was considered too dangerous.

The heparinized blood was transported on ice to the Veterinary Research Laboratories, Kabete, Kenya, and examined 72 h later for five haematological parameters.

RESULTS

The results are presented in Table 1. A comparison with the results obtained from shot and chemically immobilized elephants are given in Table 2.

DISCUSSION

The results obtained in this study probably can be regarded as closer to the normal than figures previously published. A possible exception are the WBC counts for lysis is known to occur in stored heparinized samples.

Debbie and Clausen[1] reported on some blood parameters of shot African elephants ($n = 8$ and $n = 18$) and Young and Lombard[4] reported on the physiological value of 11 African elephants which had been chemically immobilized.

The results obtained in this study vary considerably from those previously reported (Table 2) and it may be that some of this variability can be attributed to the stresses occasioned by shooting and chemical restraint. Other factors may, of course, affect haematological

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values and amongst these are the species and sub-species of the subjects, their age, sex, reproductive and nutritional status, level of hydration, general health and possibly the altitude above sea level at which they live.

TABLE 1. Results of blood examination of five captive African elephants.

Elephant	Age yrs	MCV	PCV%	Hb g/100 ml	RBCx10^6/mm^3	WBC/mm^3
Wando	48	120	36.1	11.4	3.0	6230
Nakofo	53	128	29.8	10.4	2.32	6750
Lwiro	32	117	34.4	11.0	2.93	7000
Kumba	28	109	34.4	12.0	3.14	6400
Zombi	27	124	35.7	11.5	2.86	7750
mean		120	34.1	11.3	2.85	6826

Key: MCV = Mean corpuscular volume (μm^3)
PCV = Packed cell volume (%)
Hb = Haemoglobin (gms/100 ml)
RBC = Red blood cells (x10^6/mm^3)
WBC = White blood cells (total/mm^3)

TABLE 2. A comparison of mean physiological parameters measured in shot, immobilized and resting African elephants.

	Debbie & Clausen (shot)	Young & Lombard (Immob. n = 11)	Woodford (at rest n = 5)
PCV	— —	48	34.1
MCV	— —	97	120.0
Hb	7.08 (n = 8)	14.5	11.3
MCH	— —	29	39.6
MCHC	— —	30	33.1
RBC	3.77 (n = 18)	5.02	2.85
WBC	11,000 (n = 18)	10,313	6,826

MCH = Mean corpuscular haemoglobin in micrograms
MCHC = Mean corpuscular haemoglobin concentration, %

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