

same nomogram, the A and B factors of the cheetahs were calculated. The A and B factors of the average blood values (Table 1) were typical of the values found for the individual blood samples. Generally, a slight respiratory acidosis, and in some cases a very slight metabolic acidosis, was experienced.

## SUMMARY

The combination of tiletamine hydrochloride and zolazepam is a safe and effective immobilizing drug for cheetahs. In thirty-eight immobilizations the range of dosage utilized was 1.6 to 3.5 mg/kg. A rapid and smooth induction occurred in two-and-a-half to ten minutes. At this dosage, the depth of anesthesia was light. The average pH and blood gas results are the following: pH = 7.34  $\pm$  0.01; pCO<sub>2</sub> = 30.4  $\pm$  0.61 mm Hg; and pO<sub>2</sub> = 101.6  $\pm$  1.86 mm Hg. Thus, the acid-base status of the cheetahs

was not seriously altered from the expected normal by immobilization. The immobilization time was about one and a half hours and serial samples showed no significant alteration in blood gas parameters. No adverse effects were observed and a smooth recovery resulted.

## ACKNOWLEDGMENTS

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## REFERENCES

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## SOME PHYSIOLOGICAL SERUM NORMALS IN FREE-LIVING WILD ANIMAL SPECIES FROM NATAL, SOUTH AFRICA

M.E. Keep\*

### INTRODUCTION

Blood analysis is frequently an invaluable tool to the zoo veterinarian in making a diagnosis of disease in wild animal species. In order to express an opinion it is essential at first to be aware of the values expected from the species

when in its normal free-living state. Upon reading the literature and speaking to those responsible for the care of zoos in this country it is clear that there is a grave shortage of this basic information. The situation is even worse for African species housed outside this continent. Therefore, however meagre the information collected by wildlife veterinarians is, it should be made available in the literature. Blood was collected from wild animals and the values for trace elements, glucose, total plasma protein (T.P.P.), albumen and globulins in the sera obtained.

### METHODS

Both black and white rhinos were captured immediately before the blood samples were taken, using Etorphine and tranquilizer mixtures. All other animals were shot immediately prior to blood collection; and in no way exerted themselves before death. All were free-

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\*Veterinarian

Natal Parks, Game and Fish Preservation Board  
Present address:

687 Town Bush Road  
Pietermaritzburg 3201  
South Africa

living wild individuals. Blood was collected in sterile bottles containing heparin and were free from mineral contamination. Care was taken to avoid any contamination during collection. Phosphate analysis was carried out within an hour of collection.

Normal readings for domestic animals are given for comparison.

### MINERAL LEVELS IN BLOOD PLASMA OF WILD ANIMALS

all in p.p.m.      n = numbers in the sample

	Ca	P	Fe	Cu	Zn	Na	K	Mg
<b>IMPALA (<i>Aepyceros melampus</i>)</b>								
n = 1								
Mean	-	-	2.75	1.20	-	3375	281	27.5
Range	Max.	-	"	"	-	"	"	"
	Min.	-	"	"	-	"	"	"
<b>BUFFALO (<i>Syncerus caffer</i>)</b>								
n = 3								
Mean	80.58	85.2	1.76	0.92	-	3160	343	35.2
Range	Max.	84.3	2.44	1.00	-	3250	363	38.8
	Min.	78.1	1.31	0.60	-	3100	288	31.3
<b>BLACK RHINO (<i>Diceros bicornis</i>)</b>								
n = 1								
Mean	84.4	-	0.75	2.4	-	3375	275	22.5
Range	Max.	"	"	"	-	"	"	"
	Min.	"	"	"	-	"	"	"
<b>WHITE RHINO (<i>Ceratotherium simum</i>)</b>								
n = 8								
Mean	109.1	53.2	1.80	1.9	1.84	3639	248	-
Range	Max.	140.6	2.44	3.0	2.25	4375	308	-
	Min.	90.0	0.75	1.0	1.65	2875	194	-
<b>NYALA (<i>Tragelaphus angasi</i>)</b>								
	n = 7	n = 6	n = 15	n = 16	n = 15	n = 16	n = 16	n = 16
Mean	87.9	84.5	3.05	0.9	3.48	3505	310	28.3
Range	Max.	90.6	4.31	1.4	5.45	4080	387	44.4
	Min.	84.4	1.31	0.6	2.05	2875	143	20.8

ELAND ( <i>Taurotragus oryx</i> )									
		n = 15	n = 15	n = 9	n = 15	n = 9	n = 15	n = 15	n = 15
Mean		91.1	52.2	5.47	0.98	2.40	3200	218	24.1
Range	Max.	101.4	74.9	10.20	2.12	3.90	3800	335	34.0
	Min.	81.3	41.0	4.20	0.39	1.14	2850	168	18.0

BLESBOK ( <i>Damaliscus dorcas</i> )									
		n = 8	n = 26	n = 28	n = 28	n = 26	n = 28	n = 28	n = 28
Mean		92.6	55.2	1.70	1.29	1.35	3512	231	25.3
Range	Max.	103.3	79.1	3.47	2.03	3.02	4020	292	27.9
	Min.	66.3	39.9	0.75	0.60	0.51	3050	175	21.6

**MINERAL LEVELS IN BLOOD PLASMA \*  
OF DOMESTIC ANIMALS**

	Cattle			Sheep			Horses	
K :	150 - 220	:	200 - 280	:	100 - 180			
Ca :	90 - 120	:	100 - 130	:	112 - 134			
Mg :	18 - 30	:	20 - 30	:	18 - 24			
P :	40 - 90	:	40 - 90	:	15 - 30			
Cu :	0.8 - 1.2	:	0.8 - 1.2	:	1 - 1.5			
Zn :	1.0 - 1.4	:	0.8 - 1.4	:	0.8 - 1.4			
Fe :	1.5 - 2.4	:	-	:	-			
Mn :	0.02- 0.1	:	-	:	0.02- .08			

\* expressed in p.p.m.

**SELECTED BLOOD CHEMISTRIES OF WILD ANIMALS**

	mg% Glucose	gm% T.P.P.	gm% Alb.	gm% Glob.
<u>WHITE RHINO</u>				
n =	14	13	14	9
Mean	65.3	8.6	2.0	6.9
Range	max.	127.0	9.8	7.9
	min.	24.1	7.1	5.8

BLACK RHINO

n =	0	1	1	1
Mean	-	8.8	2.6	5.2
Range max.	-	-	-	-
min.	-	-	-	-

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BLESBOK

n =	15	10	10	10
Mean	67.2	6.1	4.0	2.1
Range max.	134.2	7.3	5.4	3.6
min.	39.4	4.7	3.0	0.4

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NYALA

n =	0	9	9	9
Mean	-	7.4	2.8	4.6
Range max.	-	10.9	3.7	8.3
min.	-	6.0	1.8	2.6

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IMPALA

n =	0	1	1	1
Mean	-	8.2	3.2	5.0
Range max.	-	-	-	-
min.	-	-	-	-

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BUFFALO

n =	3	0	0	0
Mean	89.0	-	-	-
Range max.	109.5	-	-	-
min.	71.8	-	-	-

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DOMESTIC CATTLE

Range	39-54	6.1-8.1	2.7-3.9	2.1-5.1
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