SAVING THE WHITE RHINO

Use of Biochemical Panels to Evaluate Health Status for Translocation

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White rhinoceros darted for translocation.

Immobilized white rhinoceros being treated for snare wound.

The staggering escalation of poaching in Africa threatens the survival of rhino populations. As recently as 2007, poaching figures were 13 rhinos/year with an increase to 83 in 2008 and 122 in 2009. In South Africa alone, numbers of poached animals doubled between 2010 and 2012, increasing from 333 rhinos killed in 2010 to 668 in 2012. Figures are estimated to continue climbing despite continual improvements in anti-poaching efforts. The stronghold of white rhino populations remains in South Africa with 18,910 of the current 20,405 living animals in Africa (2012 population estimates).

Translocation of rhino to additional areas within their natural range increases protection by spreading out the population. Hundreds of rhinoceros are immobilized for translocation each year. The risks of anesthesia are compounded by transport often over long distances and boma confinement to allow acclimatization to new environments. The IUCN Rhino Specialist Group estimates 5% mortality for translocated rhinos in South Africa and Namibia. However, the prevalence of morbidity (e.g., anorexia, abnormal fecal consistency, onset of illness such as Salmonellosis) is probably underestimated. Historically, assessment of health prior to transport was complicated by logistics of field procedures. However, the development of point-of-care technology now provides valuable tools for health evaluations on free-ranging rhinos.

Studies are being conducted using samples collected from hundreds of white rhinoceros in Kruger National Park using the Abaxis Vetscan VS2 and Large Animal Chemistry rotor. From these data, species-specific reference ranges have been developed that can be used to detect underlying health issues (Mathebula, Miller, Buss, et al., 2012).

Using the reference values as a baseline, medical concerns can now be detected in white rhino that are not suitable candidates for translocation (for instance, during boma acclimatization prior to transport). Early intervention can be implemented to prevent more serious sequelae. These values also provide information to compare with rhinos that may have survived a poaching incident to determine prognosis.

Greater understanding of factors impacting successful translocation of rhinos will enhance the management and conservation efforts crucial to saving this species. The availability of rapid health assessment using the ABAXIS Vetscan VS2 is one tool in improving our knowledge in the wildlife medicine field.

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Reference:
Mathebula, N., M. Miller, P. Buss, J. Joubert, L. Martin, M. Kruger, M. Hofmeyr, and F. Olea-Popelka. 2012. Biochemical values in free-ranging white rhinoceros (Ceratotherium simum) in Kruger National Park, South Africa. J. Zoo Wildl. Med. 43:530-538.

Biochemical values for free-ranging male and female white rhinoceros in Kruger National Park (2006-2010).

	Parameter	n	Mean	SD	SEM	95% CI (mean)		Median	95% CI (median)	
Females	Albumin (g/dl)	84	2.18	0.96	0.10	1.97	2.39	2.70	2.30	2.80
	ALP (U/L)	85	62.76	23.86	2.59	57.62	67.91	58.00	56.00	64.04
	AST (U/L)	85	48.33	19.78	2.15	44.06	52.60	43.00	39.00	46.00
	Ca (mg/dl)	85	11.72	1.34	0.15	11.43	12.01	11.90	11.80	12.00
	GGT (U/L)	85	13.01	3.96	0.43	12.16	13.87	12.00	11.99	13.00
	TP (g/dl)	85	9.71	0.82	0.09	9.54	9.89	9.70	9.50	10.00
	Globulin (g/dl)	70	7.31	1.32	0.16	6.99	7.63	6.85	6.60	7.17
	BUN (mg/dl)	85	10.13	3.41	0.37	9.39	10.87	10.00	9.00	10.00
	CK (U/L)	85	148.38	74.39	8.07	132.33	164.42	128.00	119.99	149.01
	Phosphorus (mg/dl)	85	5.34	8.46	0.92	3.51	7.16	4.40	4.30	4.60
	Mg (mg/dl)	85	3.08	0.38	0.04	3.00	3.16	3.00	3.00	3.20
Males	Albumin (g/dl)	96	2.17	0.94	0.10	1.98	2.36	2.55	2.20	2.70
	ALP (U/L)	96	68.75	27.24	2.78	63.23	74.27	64.00	60.81	68.09
	AST (U/L)	96	48.53	23.43	2.39	43.78	53.28	40.50	37.00	45.00
	Ca (mg/dl)	96	11.76	1.77	0.18	11.40	12.12	12.00	11.80	12.20
	GGT (U/L)	96	14.14	5.50	0.56	13.02	15.25	13.00	12.00	15.00
	TP (g/dl)	96	9.93	1.50	0.15	9.63	10.23	10.00	9.60	10.30
	Globulin (g/dl)	80	7.40	1.72	0.19	7.02	7.78	7.15	6.77	7.50
	BUN (mg/dl)	96	10.59	3.53	0.36	9.88	11.31	10.00	9.91	11.09
	CK (U/L)	96	160.66	102.80	10.49	139.83	181.49	139.50	126.72	157.09
	Phosphorus (mg/dl)	96	4.37	0.96	0.10	4.18	4.56	4.35	4.10	4.60
	Mg (mg/dl)	96	3.21	0.55	0.06	3.10	3.32	3.25	3.10	3.40