1991 Kock

ABSTRACTS

M. D. Kock, M. la Grange, and R. du Toit. Chemical immobilization of free-ranging black rhinoceros (*Diceros bicornis*) using combinations of etorphine (M99), fentanyl, and xylazine. Journal of Zoo and Wildlife Medicine (1990) **21**, (2) 155–165.

Fifty two free-ranging black rhinoceroses (*Diceros bicornis*)of varying ages were immobilized. Eleven rhinoceroses were darted on foot and 41 were darted from a helicopter. Twenty eight animals were immobilized using 3mg etorphine and 100mg xylazine per animal. Twenty four animals were immobilized using a mean dose per animal (mean ± SE) of 1.8 mg ± 0.13 mg etorphine and 30.9 mg ± 1.1 mg of fentanyl combined with a standard dose of 100 mg xylazine. Induction time for both of the etorphine combinations (n=52) was 20.0 ± 2.5 min (median 13.5 min.), there being no significant difference in induction time between the two combinations. The mean duration of immobilization was 184 ± 10.6 mins. The mean reversal time following the administration of a narcotic antagonist was 3.0 ± 0.2 min (median 2.5 min). Individual animals were placed into an outcome classification at capture: 29 were classified as normal, and 23 as stressed. Of the rhinoceroses darted from a helicopter, 19 were classified as stressed, and those animals darted on foot, 4 were classified as stressed. Capture related fatalities did not occur.

M. D. Kock, R. du Toit, D. Morton, N. Kock, and B. Paul. Baseline biological data collected form chemically immobilized free-ranging black rhinoceroses (*Diceros bicornis*) in Zimbabwe. Journal of Zoo and Wildlife Medicine (1990) **21** (3), 283–291.

Biological data were collected from free-ranging black rhinoceroses (*Diceros bicornis*) which were chemically immobilized for capture and translocation from the Zambezi valley in Zimbabwe. Baseline physiological data and haematological data were determined from 31 rhinoceroses in 1986, and 53 rhinoceroses in 1988. Baseline biochemical data including cortisol, creatine phosphokinase (CPK), lactic dehydrogenase (LDH), aspartate transaminase (GGT), alkaline phosphatase (ALP), total protein (TP), albumin, globulin, blood urea nitrogen (BUN), creatinine, glucose, magnesium, phosphorous, calcium, sodium, potassium, chloride, total bilirubin, cholesterol, thyroid stimulating hormone (TSH), tri-iodothyronine (FT3) and thyroxine (FT4) were determined from 53 rhinoceroses in 1988, and TP and cortisol from 29 rhinoceroses in 1986. The data were evaluated for age and sex differences. Significant differences ($P < 0.05$) were found for selected biochemical and hormonal values including CPK, ALP, GGT, glucose, TP, phosphorous, creatinine, cholesterol, FT3, and FT4 between adult and subadult rhinoceroses. Significant differences were found for CPK, ALP, albumin, globulin, calcium and phosphorous between male and female rhinoceroses. Age differences were measured with selected haematological values including haemoglobin, MCV, MCH, MCHC, total WBC counts, and absolute lymphocyte and monocyte counts. There were no significant differences for haemotological parameters between sexes. These results provide baseline reference values for determining deviations from normal health in the black rhinoceros.

M. D. Kock, R. Du Toit, N. Kock, D. Norton, C. Foggin, and B. Paul. Effects of capture and translocation on biological parameters in free-ranging black rhinoceroses (*Diceros bicornis*) in Zimbabwe. Journal of Zoo and Wildlife Medicine (1990) **21** (4), 414–424.

Sixty-four free-living black rhinoceroses (*Diceros bicornis*) were chemically immobilized in the Zambezi valley and Midlands of Zimbabwe in 1988. Animals were transported under sedation 1–200 km to holding bomas, revived, and maintained 1 to 80 days before being translocated. Physiological parameters (temperature, respiration, pulse) were measured at capture, during transport from the capture site to holding bomas, and before anaesthetic reversal. Serial blood samples were collected at capture (Sampling Period 1, p=50), after transport from capture site to holding bomas (Sampling Period 2, n=52), and following varying periods of boma confinement (Sampling Period 3, n=32). Haematological parameters, including red blood cell count (RBC), haemoglobin (Hb), packed cell volume (PCV), and white blood cell count (WBC), and differential WBC counts were determined for the three sampling periods. Red blood cell indices were measured for Sampling Periods 1 and 3 only. Biochemical parameters were determined for the Sampling Periods 1 and 3, and included cortisol, creatine phosphokinase (CPK), lactic dehydrogenase (LDH), aspartate transaminase (AST), alanine transaminase (ALT), alkaline phosphatase (ALP), total protein (TP), albumin, globulin, albumin:globulin (AG) ratio, blood urea nitrogen (BUN), creatinine, glucose, magnesium, phosphorous, calcium, sodium, potassium, chloride, total bilirubin, and cholesterol. Selected biochemical parameters were determined during Sampling Period 2 and included cortisol, CPK, LDH, AST, ALT, BUN, creatinine, glucose, sodium, potassium, and chloride. Individual rhinoceroses were placed into normal or stressed outcome classifications at capture. Measurements of selected biological parameters revealed differences ($P<0.05$) in cortisol and glucose values related to capture stress. Comparisons of biological parameters over Sampling Periods 1–3 revealed differences ($P<0.05$) in cortisol, CPK< LDH< AST, glucose, total bilirubin, calcium, magnesium, phosphorous, potassium, chloride, creatinine, BUN, albumin, globulin, cholesterol, haemoglobin, PCV, and WBC counts and differentials. These differences reflected the physiologic response of the black rhinoceros to acute and chronic stressors. Although no animals died at capture, there was an indirect mortality rate of 14% (9/64) at 1 week to 2 months postcapture.

N. Kock, and M. Kock. Skin lesions in free-ranging black rhinoceroses (*Diceros bicornis*) in Zimbabwe. Journal of Zoo and Wildlife Medicine (1990) **21** (4), 447–452.

Thirty-three biopsies from skin lesions were taken from immobilized black rhinoceroses (*diceros bicornis*) during capture and translocation in Zimbabwe. The lesions were ulcerated, exudative and crusty and were consistently present in the skin of the ventral neck. Histologically, the ulcerative dermatitis was accompanied by epidermal adult filarial nematodes, intraepidermal necrosis, and dermal granulomas and lymphohistiocytic nodules in some cases.