

Chemical immobilisation of lions: weighing up drug effectiveness versus clinical effects

Supplementary Table I: Times and quality scores of inductions, immobilisation, and recovery recorded in free-ranging African lions (*Panthera leo*) immobilised with tiletamine-zolazepam-medetomidine (TZM), ketamine-medetomidine (KM) and ketamine-butorphanol-medetomidine (KBM). Time periods (minutes) are presented as mean \pm SD. Scores are presented as median (range), ($n = 12$ per drug combination).

	TZM	KM	KBM
Darting to initial effect (minutes)	3.93 \pm 1.10 ^a	2.77 \pm 0.59 ^b	3.32 \pm 1.10
Darting to sternal recumbency (minutes)	6.26 \pm 1.82	5.19 \pm 0.77	6.53 \pm 2.13
Darting to NRTS (minutes)	10.54 \pm 2.67	10.49 \pm 2.63	11.11 \pm 2.91
Antagonist administration to sternal recumbency (minutes)	26.12 \pm 14.67 ^{ac}	13.87 \pm 9.64 ^b	10.24 \pm 4.29 ^b
Antagonist administration to standing (minutes)	29.19 \pm 14.73 ^{ac}	15.15 \pm 4.27 ^b	10.83 \pm 4.28 ^b
Antagonist administration to walking (minutes)	29.73 \pm 14.46 ^{ac}	15.29 \pm 10.68 ^b	10.88 \pm 4.29 ^b
Sternal recumbency following antagonist administration to walking	3.61 \pm 7.92	1.36 \pm 3.11	0.64 \pm 0.70
Induction score	1 (1–2)	1 (1–2)	1 (1–2)
Immobilisation score			
T ₀	4 (4–5)	3.5 (2–5)	4 (3–5)
T ₁₀	4 (3–5)	4 (2–5)	4 (3–5)
T ₂₀	4 (3–5)	4 (2–5)	4 (2–5)
T ₃₀	4 (2–5)	4 (–5)	4 (2–5)
Recovery score	1 (1–2)	1.25 (1–2)	1 (1–2)
Number of spontaneous recoveries	0	2	1

NRTS – non-responsive to stimuli

^a Significantly different from animals immobilised with KM (One way Anova)

^b Significantly different from animals immobilised with TZM (One way Anova)

^c Significantly different from animals immobilised with KBM (One way Anova)

Supplementary Table II: Physiological variables in free-ranging African lion (*Panthera leo*) immobilised with tiletamine-zolazepam-medetomidine (TZM), ketamine-medetomidine (KM) or ketamine-butorphanol-medetomidine (KBM), recorded at 0, 10, 20, and 30 minutes after lateral recumbency. Data are presented as mean \pm SD, ($n = 12$ per drug combination).

Sampling time	TZM	KM	KBM
Heart rate (beats/min)			
T ₀	61 \pm 8	67 \pm 6	64 \pm 6
T ₁₀	60 \pm 6	66 \pm 6	63 \pm 7
T ₂₀	59 \pm 7	64 \pm 9	61 \pm 6
T ₃₀	58 \pm 6*	65 \pm 9*	59 \pm 6*
Respiratory rate (breaths/min)			
T ₀	18 \pm 3	19 \pm 7	16 \pm 3
T ₁₀	18 \pm 3	19 \pm 7	16 \pm 3
T ₂₀	19 \pm 2	20 \pm 10	17 \pm 2
T ₃₀	18 \pm 2	19 \pm 8	16 \pm 3
Peripheral arterial haemoglobin saturation with oxygen (%)			
T ₀	97 \pm 2 ^{****}	96 \pm 3 ^{oo}	95 \pm 5 ^{****}
T ₁₀	98 \pm 3 ^{****}	96 \pm 5 ^{oo}	98 \pm 2 ^{****}
T ₂₀	98 \pm 1 ^{****}	96 \pm 6 ^{oo}	97 \pm 2 ^{****}
T ₃₀	97 \pm 2 ^{****}	95 \pm 6 ^{oo}	98 \pm 2 ^{****}
Rectal temperature (°C)			
T ₀	39.5 \pm 0.5	39.7 \pm 1.3	39.5 \pm 0.5
T ₁₀	39.5 \pm 0.5*	39.7 \pm 1.3*	39.4 \pm 0.6*
T ₂₀	39.3 \pm 0.5*	39.5 \pm 1.4*	39.3 \pm 0.6*
T ₃₀	39.2 \pm 0.5*	39.5 \pm 1.2*	39.0 \pm 0.6*
Systolic arterial pressure (mmHg)			
T ₀	212.1 \pm 10.9	225.8 \pm 21.8	211.4 \pm 20.3
T ₁₀	196.7 \pm 14.0*	213.0 \pm 20.6*	203.3 \pm 21.1*
T ₂₀	189.9 \pm 16.5*	202.5 \pm 21.1*	188.8 \pm 19.1*
T ₃₀	182.9 \pm 16.3*	194.8 \pm 18.1*	185.6 \pm 19.0 ^{oo}
Mean arterial pressure (mmHg)			
T ₀	166.7 \pm 5.2	179.7 \pm 11.1	171.1 \pm 13.0*
T ₁₀	159.2 \pm 6.6*	171.0 \pm 10.0*	164.3 \pm 13.4*
T ₂₀	152.2 \pm 9.7*	162.4 \pm 12.0*	156.1 \pm 14.3*
T ₃₀	150.5 \pm 11.8*	157.1 \pm 10.8*	151.5 \pm 16.4 ^{oo}
Diastolic arterial pressure (mmHg)			
T ₀	150.5 \pm 6.9	158.8 \pm 9.7	152.7 \pm 11.8
T ₁₀	145.4 \pm 8.5*	154.1 \pm 10.2	150.1 \pm 11.6
T ₂₀	139.4 \pm 11.0*	143.5 \pm 15.0*	142.4 \pm 12.8*
T ₃₀	135.9 \pm 9.9*	142.8 \pm 10.2*	135.9 \pm 15.2 ^{oo}

Note: ^o $n = 11$; ^{oo} $n = 9$; ^{oo*} $n = 7$; ^{****} $n = 6$; * Measurement significantly different from measurement at T₀ (Linear mixed effects model)