

Determining baseline blood chemistry values of free ranging African buffalo (*Syncerus caffer*) and the effect of bovine tuberculosis



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INTRODUCTION

Baseline blood chemistry values were determined for African buffaloes (*Syncerus caffer*) in the Kruger National Park to ascertain their usefulness in detecting Bovine tuberculosis (BTB) before clinical signs become visible and also to be used as a diagnostic tool.

MATERIALS & METHODS

Serum samples collected at the 2003 and 2005 Bovine tuberculosis surveys were thawed and analysed on the Pentra 400[®] Chemistry system. Parameters tested included chloride (Cl⁻), creatinine, potassium (K), urea, sodium (Na), calcium (Ca), aspartate aminotransferase (AST), alanine aminotransferase (ALT) and immunoglobulins.

DATA ANALYSIS

An ANOVA was used to evaluate the effects of age, sex and BTB status on blood chemistry values.

RESULTS

BTB related effects

- BTB positive juveniles had significantly lower Cl⁻ and AST concentrations than BTB negative animals
- BTB positive buffaloes of all age groups had significantly lower urea concentrations than BTB negative buffaloes.
- The BTB status of buffaloes had no effect on the ALT, IgG, Na and Ca concentrations.
- BTB positive animals showed significantly increased K, creatinine and Cl⁻ (sub-adults and adults only) concentrations.

Age and sex related effects

- Juveniles had significantly higher K and creatinine; and lower AST concentrations than the other age groups.
- Adult buffaloes had significantly lower ALT concentrations than juveniles and sub-adults of the same BTB status.
- IgG levels were significantly higher in adults when compared to juveniles.
- Significant sex related effects were seen in K, and urea concentrations
- Age, sex and BTB status had no significant effect on Na and Ca concentrations.

Table 1: Baseline Blood Chemistry values for African buffaloes (*Syncerus caffer*).

n = 58	Average	Standard Deviation	Minimum	Maximum
Cl ⁻ (mmol/L)	92.35	5.83	75.54	103.29
K (mmol/L)	5.2	1.78	3.26	10.81
Na (mmol/L)	129.087	8.69	104.88	143.8
ALT (U/L)	10.2	3.99	1.89	21.99
AST (U/L)	96.67	39.88	4.11	266.34
Ca (mmol/L)	1.76	0.39	0.64	2.4
Crea (umol/L)	156.33	33.94	43.42	293.01
Urea (mmol/L)	3.41	1.03	1.44	5.41
IGG (g/L)	13.84	2.42	6	17.4

CONCLUSION

- Baseline blood chemistry values have been determined and can be used when determining the general health status of buffaloes.
 - Cl⁻, AST, Urea, K and creatinine concentrations can be used to detect BTB before clinical signs become visible in buffalo.
 - Further research is needed.
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