

SURVEY OF NUTRIENT CONCENTRATIONS IN THE DIET, SERUM, AND URINE OF GIRAFFE MAINTAINED IN NORTH AMERICAN ZOOS

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Abstract

In order to elucidate the causes of urolithiasis in giraffe, a comprehensive survey was initiated in September 2004 of giraffe within North American zoological institutions. Giraffe feeding practices and medical histories were examined, and holding institutions were recruited to submit samples of feeds, water, serum, urine and feces, and asked to participate in a feeding trial. Currently, 37 out of the 95 institutions contacted through the giraffe American Zoo and Aquarium Association Species Survival Plan Program have responded. Nineteen of the 37 institutions have agreed to provide samples of feeds, water, serum, urine or feces. Preliminary serum and urine analyses from three giraffe from one zoo have been completed (Table 1). Serum concentrations were similar to previously published values,¹⁻⁴ with slightly elevated Ca and blood urea nitrogen (BUN) and high glucose (GLU). Average urine concentrations were within acceptable ranges (Table 1) with an average pH value of 9. Further efforts will continue to focus on comparisons of serum and urine chemistries between zoos and include comprehensive dietary analyses to gain further insight into the nutritional factors that may incite urolithiasis in captive giraffe.

LITERATURE CITED

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Table 1. Comparison of serum and urine chemistry data for giraffe (mg/dl \pm SEM) with published serum data.

	Magnesium	Calcium	Phosphorus	Glucose	Blood urea nitrogen	Creatinine
Serum	2.3 \pm 0.16	8.6 \pm 0.46	9.5 \pm 0.72	255 \pm 39.6	29 \pm 1.6	1.9 \pm 0.14
Urine	70.1 \pm 10.89	11.4 \pm 3.40	6.2 \pm 0.9	na ^a	na	373 \pm 37.6
Jansen and Nijboer, 2003	1.2	5.0	9.3	138.7	na	1.8
ISIS, 2001	3.9 \pm 4.5	8.0 \pm 0.80	10.9 \pm 2.8	105 \pm 62.0	22 \pm 4.0	na
Kearney, 2005	2.7 \pm 0.6	8.6 \pm 0.29	10.9 \pm 0.60	99 \pm 8.1	21 \pm 0.7	1.7 \pm 0.06
Bush et al., 1980	na	4.8 \pm 0.14	10.0 \pm 2.7	179 \pm 54.0	na	na

^aNot applicable.