# ELECTROPHORESIS AND ACUTE PHASE PROTEINS IN HEALTHY, INJURED, AND DISEASED SOUTHERN WHITE RHINOCEROS (*Ceratotherium simum simum*) AND BLACK RHINOCEROS (*Diceros bicornis*)

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## Abstract

Quantitation of acute phase proteins in nondomesticated mammals by either serum protein electrophoresis or specific acute phase protein assays is becoming more widely available for research and clinical applications.[1,2] Acute phase protein quantitation can be valuable in health assessments as well as for prognostic value.[2] Recent work using agarose gel electrophoresis in serum samples from the southern white rhinoceros (*Ceratotherium simum simum*) defined several significant differences between normal rhinos and animals with wounds related to poaching and other injuries.[3] In an expanded study of the same sample set, 30% of wounded animals were observed to have increased serum amyloid A (SAA) levels determined by a multi-species SAA ELISA (Tridelta, Kildare, Ireland). A working reference interval of 0-20 mg/L was determined. Values in wounded animals ranged from normal levels to an excess of 100 mg/L. A case of suspected leptospirosis demonstrated increased SAA, consistent with changes to the CBC; however, no SAA increases were seen in a separate case of fibromyxosarcoma. The ELISA has been applied to the black rhinoceros (*Diceros bicornis*) under human care and a range of 0-5 mg/L was observed. In a case of long term undetermined illness in a black rhinoceros, the SAA values ranged from 3.8 to 17.9 mg/L. In these and other cases, protein electrophoresis had variable sensitivity in the detection of clinical abnormality or inflammation. The examination of additional samples with varied clinical presentations as well as repeated measures should prove helpful in understanding the clinical utility of SAA quantitation and electrophoresis in rhinoceros under human care.

**Key words:** Black rhinoceros, *Ceratotherium simum simum*, *Diceros bicornis*, protein electrophoresis, serum amyloid A, white rhinoceros

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