

115 CHARACTERIZING NEUTROPHIL PROFILES IN HORSES FOR RHINOCEROS CAPTURE

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Abstract.

Conservation of several African species is becoming essential, and efforts to move threatened animals are causing physiological and reproductive problems. To save these species, a more comprehensive knowledge of their biology and response to stressors is required. Capture stress of rhinoceroses has been quantified (Kruger *et al.* 2011 *Reprod. Fertil. Dev.* 23, 181–182) by evaluating leucocyte coping capacity (LCC). LCC is the measurement of the fluorescence of circulating active neutrophils, then expressed as optical density (OD)/1000 neutrophils. The LCC then provides a standardized value between species as we used identical conditions and reagents. To quantify the role of LCC in rhinoceros conservation, it is essential to characterize normal LCC profiles of healthy unstressed rhinoceroses. Horse neutrophils are very similar to rhinoceros neutrophils in their biological activity. The objective of the study was to characterize normal LCC profiles in stallions, geldings, nonpregnant mares, pregnant mares, as well as fillies and colts of various ages as a benchmark for adult and juvenile rhinoceroses. The LCC profiles are shown in Figures 1 to 3. For the colts (days, weeks, and months old) there was little difference in their LCC profile over time. For the fillies (days, weeks, and months old) the LCC response for fillies only days old was significantly ($P < 0.05$) greater when compared to fillies that were weeks and months old. For the adult horses, the stallions had the lowest overall LCC and were very similar to nonpregnant mares. The LCC of pregnant mares was of significantly ($P < 0.5$) greater magnitude than that of stallions and nonpregnant mares. The LCC response of gelding was significantly ($P < 0.5$) greater than that of stallions and nonpregnant mares, but significantly ($P < 0.5$) lower than that of pregnant mares. The stallion and pregnant mare responses mirrored the quantitative responses of breeding rhinoceros bulls and pregnant rhinoceros cows. From the data (Figure 4) we suggest that breeding males (stallions, elephants, and rhinoceros bulls) have the lowest LCC activity curves, as their breeding activities result in higher daily stresses. We hypothesized that the stressed bulls have their neutrophil activity down regulated by circulating corticosteroids. The converse is true for pregnant females (mares and cows), as they may have more vigorous neutrophils and therefore the highest LCC curves. These basic studies support and validate the role of rapid LCC in stress evaluation of wild caught rhinoceroses and horses could be applicable for captured elephant.