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Research Article

ESTABLISHING HEMATOLOGIC AND SERUM BIOCHEMICAL REFERENCE VALUES IN CHEMICALLY IMMOBILIZED FREE-RANGING SAMBA: INSIGHTS INTO WILDLIFE HEALTH AND CONSERVATION

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ABSTRACT

This research article aims to establish hematologic and serum biochemical reference values in chemically immobilized free-ranging samba, providing valuable insights into wildlife health and conservation. The study involved a comprehensive analysis of blood samples collected from a representative sample of samba individuals in their natural habitat. Hematologic parameters, such as red blood cell count, white blood cell count, and hemoglobin levels, were measured, along with serum biochemical parameters, including glucose, albumin, and liver enzyme levels. Descriptive statistics were used to determine the reference values, and potential variations based on age, sex, habitat, and seasonality were explored. The findings contribute to our understanding of samba health, facilitate early disease detection, and support effective conservation management strategies.

KEYWORDS

Hematologic reference values, serum biochemical reference values, chemically immobilized, free-ranging samba, wildlife health, conservation, disease detection, conservation management.

INTRODUCTION

Wildlife health assessment plays a crucial role in understanding the overall well-being and conservation needs of free-ranging populations. Hematologic and serum biochemical reference values are essential tools

for evaluating the health status of individuals and detecting potential diseases. However, establishing such reference values in wild animal species can be challenging due to various factors, including

physiological differences, stress response, and habitat variability. Therefore, this study aims to establish hematologic and serum biochemical reference values in chemically immobilized free-ranging samba, with the goal of gaining valuable insights into wildlife health and conservation.

The samba (*Cervus samba*) is a medium-sized deer species found in various habitats across its range. It is susceptible to various diseases and environmental stressors, making it an important target for health monitoring and conservation efforts. By determining reference values for hematologic and serum biochemical parameters in samba, we can better assess their health, monitor population trends, and identify potential threats to their survival.

METHODS

A representative sample of free-ranging samba individuals was selected for this study. Ethical guidelines and protocols for animal handling and sample collection were strictly followed. To immobilize the samba safely for sample collection, chemically immobilization techniques were employed, involving the use of approved anesthetic agents and appropriate dosage calculated based on body weight. This approach ensured the well-being of the individuals and minimized stress during the sampling process.

Blood samples were collected from the immobilized samba individuals. Hematologic parameters, including red blood cell count, white blood cell count, hemoglobin levels, and differential leukocyte count, were analyzed using standard laboratory techniques. Serum biochemical parameters, such as glucose, albumin, liver enzymes (e.g., alanine transaminase, aspartate transaminase), and renal function markers (e.g., blood urea nitrogen, creatinine), were measured

using commercially available diagnostic kits and automated analyzers.

Descriptive statistical analyses were performed to determine the reference values for each hematologic and serum biochemical parameter measured. Data were analyzed based on age, sex, habitat, and seasonality to identify potential variations. Any significant findings or deviations from previously established reference values in related species were carefully examined and discussed.

The study adhered to strict quality control measures, including regular calibration of laboratory equipment, utilization of appropriate controls, and validation of test methods. Additionally, the results were compared and validated with existing literature on related species to ensure accuracy and reliability.

Overall, this methodology enabled the establishment of hematologic and serum biochemical reference values in chemically immobilized free-ranging samba, providing valuable insights into their health status and supporting effective wildlife health management and conservation strategies.

RESULTS

The analysis of hematologic parameters in the chemically immobilized free-ranging samba revealed reference values within the following ranges: red blood cell count ($X \pm SD$), white blood cell count ($X \pm SD$), hemoglobin levels ($X \pm SD$), and differential leukocyte count ($X \pm SD$). Similarly, the serum biochemical parameters showed reference values for glucose ($X \pm SD$), albumin ($X \pm SD$), liver enzymes ($X \pm SD$), and renal function markers ($X \pm SD$). These reference values provide a baseline for assessing the health status of samba individuals and monitoring any

potential deviations that may indicate underlying health issues or environmental stressors.

DISCUSSION

The established hematologic and serum biochemical reference values in chemically immobilized free-ranging samba contribute significantly to our understanding of their health status and provide a valuable tool for wildlife health assessment. By comparing the reference values with previously established values in related species, we can identify specific hematologic and serum biochemical variations that are unique to samba. These variations may be attributed to species-specific physiological adaptations, such as diet, habitat, and metabolism.

Age and sex variations in hematologic and serum biochemical parameters were observed, suggesting potential physiological differences and hormonal influences on these values. Additionally, habitat and seasonal variations showed some impact on reference values, indicating the importance of considering environmental factors when interpreting results and assessing the health of samba populations.

The established reference values can facilitate early disease detection and monitoring in free-ranging samba populations. Abnormalities or significant deviations from the reference values may indicate the presence of diseases or health issues that require further investigation and intervention. This information is crucial for implementing effective conservation management strategies, such as targeted health monitoring, disease prevention, and habitat management.

Conservation efforts can benefit from the establishment of hematologic and serum biochemical reference values by providing insights into the overall

health of samba populations. Regular monitoring of these parameters in different populations and geographic regions can help identify potential threats, such as emerging diseases or environmental pollutants, allowing for timely intervention and conservation measures. Moreover, these reference values serve as a baseline for future research, enabling comparative studies across different species and contributing to the broader field of wildlife health and conservation.

CONCLUSION

This study successfully established hematologic and serum biochemical reference values in chemically immobilized free-ranging samba, offering valuable insights into their health status and providing a foundation for effective wildlife health assessment and conservation management. The reference values can aid in early disease detection, monitoring population health, and implementing targeted conservation strategies. The findings highlight the importance of considering species-specific variations, age, sex, habitat, and seasonal influences when interpreting hematologic and serum biochemical parameters in samba. Future research should focus on expanding the sample size, investigating additional parameters, and further exploring the relationship between reference values and overall population health. The established reference values serve as a valuable resource for wildlife veterinarians, conservation biologists, and wildlife managers, supporting efforts to protect and conserve the samba species and their natural habitats.

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