

Short communication:

**Haematological and Blood Chemical Profile of Equines
 in Sudan: A preliminary Report**

Fadia¹ A. Ali; Abaker², A. D. and Hamid³, M. E.

(1) Nyala Veterinary Hospital, Southern Darfur State, P.O. Box 24 (2) Faculty of Veterinary Science, University of Nyala, Nyala. (3) Faculty of Veterinary Medicine, University of Khartoum, Khartoum North, P.O. box. 32.

Summary

The mean PCV, Hb, differential leukocyte counts, total protein, albumen, globulin and glucose values of healthy Sudanese horses and donkeys showed slight to significant differences from those adopted internationally. This report emphasizes the need for local healthy controls to be adopted in each experiments or survey in order to evade biased results or erroneous interpretation that may arise when comparing locally obtained results with international values.

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Laboratory data including results of haematological and blood chemical parameters are necessary to confirm presence or absence of a disease, to assess the severity of a disease, and to estimate the response of a therapy (Faver, 1997). Although the importance of equines is not debatable in Sudan, they received very little attention from the research point of view. Recent statistics has estimated the Sudanese equines' population at 260,000 horses and 730,000 donkeys (FAO, 2000).

The aim of the present study was to determine the main haematological and blood chemical values for healthy working horses and donkeys in order to contribute towards the establishment of a local database for future application.

Seventeen donkeys and 17 horses obtained from Nyala town and neighbouring villages, Southern Darfur State, were used. Confirmation of the animal healthiness was achieved by routine clinical examinations, history of no illness and freedom from blood and gastrointestinal parasites.

Ten ml blood sample was collected from the jugular vein of each animal for haematological and blood biochemical examinations, of which 5ml were kept in tubes containing EDTA and 5ml were allowed to clot and centrifuged at 11000 r.p.m. for 2 min. The serum was then separated and stored at -20°C until analyzed. Haemoglobin concentration (Hb), packed cell volume (PCV) and total leukocyte count were done according to Jain (1986). The serum total proteins were determined using the Biuret method (King and Wootton, 1965) and glucose as described by Faver (1997). Serum albumin was estimated according to Bartholomew and Delay (1966) and serum globulin was calculated as the difference between total proteins and albumin. The standard international data were used as a control. Student T-test was used for the calculation of the variances and levels of significance between the two groups (Michael and David, 1993).

The mean values of PCV, Hb, differential leukocyte counts, total protein, albumen, globulin and glucose of studied equines are shown in figure 1. Slight to significant differences were noticed in some parameters when compared to published standard data. PCV and Hb showed significant differences from those used by Jain (1986). The mean PCV value of Sudanese horse was 40% whereas that of the donkey was 34% and the reference (standard) mean value is 42%. Horse's mean Hb value was 12.6 mg/dl, donkey's was 10.8 mg/dl and the reference mean value is 15 mg/dl. Total protein, on the other hand, was high in Sudanese horse (7.4g/dl) and donkey (7.2g/dl), compared to reference data (6.5g/dl). Horse's mean glucose concentration (80mg/dl) was lower than the reference mean value (95mg/dl), but donkeys mean glucose concentration (100 mg/dl) was higher than the reference mean value. These are interesting readings and the reasons behind these differences might be due to genetic or environmentally induced factors.

The 34 equines used in this study were selected from Darfur, Equines are important animals in Darfur, indispensable for transportation and leisure activities. Absence of local data about equine haematological and blood chemical parameters has urged us to conduct this study. There are breed and environmental differences between equines world-wide and, presumably, likewise in the Sudan. These differences might be significant enough to affect the interpretation of diseases upon animal physiology.

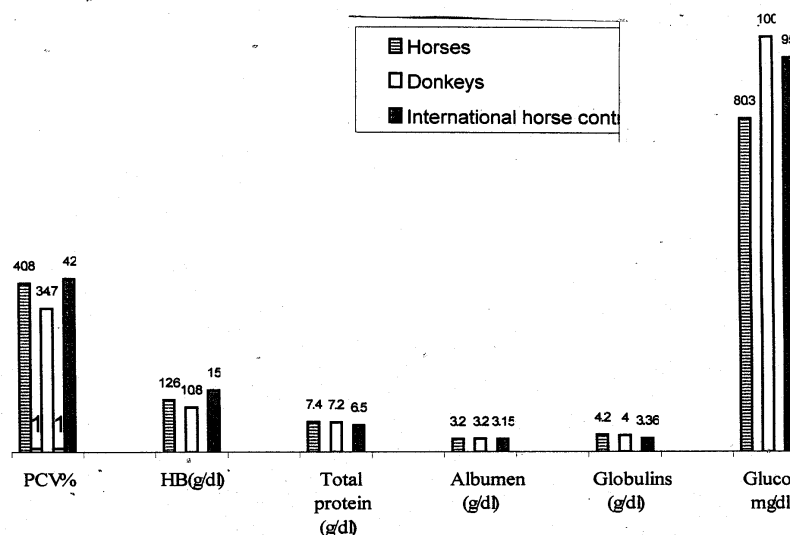


Fig. 1: Some haematological blood biochemical values (means) of horses and donkeys in comparison to international standards.

Determination of the mean values by carrying out many studies on equines from different parts of the Sudan is essential in establishing a reliable Sudanese database to define what a healthy working horse or donkey is.

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