

## SOME HEMATOLOGICAL VALUES FOR CAPTIVE GAZELLA DORCAS

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**ABSTRACT:** Normal mean values for Hemoglobin, packed cell volume, red blood cell count, white blood cell count, erythrocyte sedimentation rate, were obtained from blood of six males and nine females Gazelle Dorcas. Males had significantly higher values for white blood cell count, and had significantly lower values for red blood cell count than the females. The rest of the parameters were not significantly different between the two sexes. With the exception of the correlation between red blood cell and the packed cell volume, were insignificant.

**Key words:** Hematology, Values, Count, Blood, Gazella dorcas

### INTRODUCTION

Reference intervals for hematological and blood chemical constituents were reported for different species of gazelles including Dorcas gazelle, *Gazella dorcas*, Grant gazelle, *Gazella granti*, Cuvieri gazelle, *Gazella cuvieri*, Thomson's gazelle, *thomsoni*, Speke's gazelle, *Gazella spekei* and Dama gazelle, *Gazella dama* (EINabi et al., 2009).

Reference ranges for hematology and blood chemistry were also investigated in captive mountain (*Gazella Gazella*) and sand (*Gazella subgutturosa marica*) gazelles in Saudi Arabia (Mohamed et al., 2010) along with data on their blood coagulation and platelet parameters (EINabi et al., 2009; Hussein et al., 2010a,b).

Knowledge of these variables is important as an aid for the diagnosis and prognosis of diseases and for assessing the health status of these animals and their ability to sustain the stressful conditions of desert life (EINabi et al., 2009; Mohammed et al., 2010).

Cloudsely-Thompson and Ghobrial (1965) outlined the physiological basis for survival of *Gazella dorcas* (= *Dorcas gazelle*) in captivity. The effect of seasonality on blood urea, haemoglobin content (Hb), packed cell volume (PCV), red blood cell (RBC) count, and plasma protein and serum electrolytes of *G. dorcas* were investigated by Ghobrial (1967). Hawkey et al. (1980) studied the impact of quick capture on the circulating erythrocytes in captive zoo animals including gazelles and related the increase in circulating erythrocytes to splenic concentration and to the significant decrease in erythrocyte size and Hb content.

The objective of this study was to establish reference ranges for hematology in healthy male and female Dorcas gazelles. These data are needed for future reference to evaluate the physiological status, pathophysiology and clinical aspects of this species. The interest in game ranching and its oriented export trade in Sudan prompted this work to provide the basic haematological and serum chemical values for captive *G. dorcas*.

### MATERIAL AND METHODS

**Animals:** six male and nine female Dorcas gazelles, aged 2-3 years were investigated between February and March, 2012. The animals were part of a herd of 30 gazelles currently kept in Soba farm Southern of Khartoum, Sudan. Their founder population comprised 15 male and 15 female gazelles originally obtained from private collections in the Sudan. They were housed in an animal enclosure and some were kept in breeding pens. They were vaccinated against enzootic infectious diseases and given coccidiostats and anthelmintics as necessary. Feeding consisted of a balanced diet of commercial concentrate (16% protein) with free access to water and mineral salt licks. All of the studied animals were checked by a wildlife veterinarian and found to be clinically normal and none of the adult females was pregnant at the time of sampling.

#### Sampling

Blood samples were collected in heparinized tubes from the jugular vein using disposable syringes. Haematological analyses were carried out according to the methods of Dacie and Lewis (1984) and included

determination of haemoglobin concentration (Hb), packed cell volume (PCV), red blood cell (RBC) count, white blood cell (WBC) count, erythrocyte sedimentation rate (ESR), (Varley, 1986).

## RESULTS

The Table 1 showed the hematological values for Dorcas gazelles. Table 2 showed the differential count of the blood of Gazella dorcas.

Parameters	Males (N=6)	Females (N=9)
	M±SD	M±SD
PCV%	31.14±4.45	31.25±3.53
Hb%	12.94±1.95	12.81±1.61
TWBS(per/μL)	5.38±.762	5.88±1.04
RBS10 <sup>12</sup> /L	7.78±.636	7.26±1.01
ESR mm/hour	0	0

Parameters	Males (N=6)	Females(N=9)
	M±SD	M±SD
lymphocytes	65.16±3.06	65.55±2.78
Neutrophil	29.33±1.50	28.33±2.00
Eosinophil	3.83±1.16	3.88±0.781
Monocyte	1.50±.83	2.00±0.50
Basophile	0.16±0.40	0.33±0.50

## DISCUSSION

There is very few blood data published in wild animals in Africa. The blood obtain from wild animals they most either be shot or immobilized. Most data are within limit reports by Fay. The blood picture was influenced in some animals by the environmental factors especially warthog. Other factors influenced in blood pictures like: age, sex, pregnancy or lactation (Bush M, Smith E E and Custer R S (1981).

Statistical analysis (Table 1) showed insignificant differences between sex in WBC (5.38±0.762), (5.88±1.04) in male and female respectively and RBC (7.78±.636), (7.26±1.01) in male and female respectively.

Means and ranges of hematological parameters are shown in Table 1 and 2, respectively. Mean RBC, HB, PCV, WBC, ESR, and TDC values were similar in male and female gazelles. Lymphocytes constituted the most predominant type of leucocytes (40-60%) in these gazelles and had significantly ( $P \leq 0.05$ ) higher value in female as compared to male gazelles and consequently, TLC was also significantly ( $P \leq 0.05$ ) higher in female as compared to male gazelles (Table 2).

However, insignificant differences in PCV, Hb and ESR were found between both males and females *G. dorcas*. Rietherk et al. (1994) observed significant differences between sex in Hb but not in PCV in *G. gazella*. The PCV% of *G. dorcas* is comparable to that recorded in *Gazella mhorr* (47.40±5.54) and *Gazella cuvier* (47.30± 2.66) by Abaigar (1993). The RBC, WBC and Hb values were slightly higher than those recorded by Abaigar (1993) in *G. mhorr* and *G. cuvier*. In *G. cuvier*, the Hb value was slightly higher than that of *G. mhorr*. The haemoglobin concentration tended to be higher in males than females but fluctuated in the same animal. This might be related to release into the blood of newly produced rythrocytes. Mohamed (2001) suggested that during tense erythrogenesis many immature RBC are released into peripheral blood. The differences in PCV value between male and female *G.dorcas*, although statistically insignificant, are in harmony with the sex related differences in RBC. The RBC and the PCV values were found to be higher in males and tended to increase with age (Abaigar, 1993). According to Bush et al. (1981), the RBC count varies with age, sex, physiological state, temperature, time of the day and season. The ESR, an indicator of the well-being of an organism, was similar in male and female of *G. dorcas*.

## REFERENCES

- Abaigar T (1993). Haematology and serum chemistry values of captive lady Gazelle (*Gazella lady mhorr*) and Cuvier's Gazelle (*Gazella cuvier*). Age to gender and reproductive status differences. *J. Zoo. Wildlife Med.* 24: 177-184.
- Bush M, Smith EE and Custer RS (1981). Haematology and serum hemistry values for captive *Dorcas gazelle*: variation with sex, age and health status. *J. Wildlife Dis*, 17:135-143.
- Cloudsely-Thompson JL and Ghobrial LI (1965). Water economy of the Dorcas gazelle, *Nature*, 207:1313.
- Dacie JV and Lewis SM (1984). *Practical Haematology*, 6th ed., Churchill and Livingstone, London.
- Hawkey CM, Frankel T, Jones DM, Ashton DG, Nevill MG, Hartm MGG, Al dersonm C and Bircher P (1980). Preliminary report of the study of changes in red blood cells of zoo animals during sedation. In: "Comparative Pathology of Zoo Animals" R.J. Montali and G. Migaki eds, Simthsonian University Press,



- Hussein MFRS, Aljumaah MA, Alshaikh AG, Elnabi M, Sandouka A and Homeida A (2010). Coagulation parameters of captive mountain gazelle (*Gazella gazella* Pallas, 1766; Bovidae: Antilopinae) and Nubian ibex (*Capra ibex nubiana* Cuvier, 1825; Bovidae: Caprinae). *Comp. Clin. Pathol.*, 10.1007/s00580-010-1124-0.
- Mohamed AF (2001). Some Haematological, Biochemical and Chemical Studies on *Dorcas gazelle*. M.Sc. Thesis, Department of Biology, Faculty of Education, University of Khartoum.
- Mohammed OB, Omer SA, Macasero WV and Kock RA (2010). Serum biochemistry reference range values for Arabian mountain gazelle (*Gazella gazella*) and Arabian sand gazelle (*Gazella subgutturosa marica*) at King Khalid Wildlife Research Centre, Saudi Arabia. *Comp. Clin. Pathol.*, 20: 187-191.
- Hussein MF, Aljumaah RS, Homeida AM, Alhaidary AA and Alshaikh MA (2010). Coagulation profile and platelet parameters of the Arabian sand gazelle (*Gazella subgutturosa marica*): Comparison with humans and camels. *J. Wildlife Dis.*, 46: 1165-1171.
- Reitherk EE, Detaima EC and Mubarak SM (1994). The haem-atological profile of the mountain gazelle (*Gazella gazelle*). Variation with sex, age, captive method, season and anaesthesia. *J. Wildl. Dis.*, 30: 69-7.
- WGhobrial LI (1967). Physiological Adaptations of Desert Mummals. Ph.D. thesis, Department of Zoology, Faculty of Science, University of hartoum.ashington, D. C. pp 625-632.

