

Chemical and Biochemical Parameters of Feline Blood in Khartoum

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Abstract: The objective of the present investigation was to determine the species specific blood parameters for the domestic cat, the prevalent pet and companion animal in the country. Normal parameters of the blood of the domestic cat *Felis domestica*, the baladi type, were measured. Haematological parameters monitored were: Red Blood Cells (RBCs), Total White Blood Cells (WBCs), Haemoglobin (Hb) concentration and percentage and Packed Cell Volume (PCV). Biochemical parameters estimated included sodium (Na) and potassium (K) ion concentrations, cholesterol concentrations, total protein contents as well as albumin and urea levels. Enzymes assayed were glutamate oxalo-acetate transaminase (GOT), glutamate pyruvate transaminase (GPT) and alkaline phosphatases (ALP).

Key words: Biochemical parameters, feline blood

INTRODUCTION

The study of a blood picture is one of the armours of a clinician towards establishing a diagnosis, response to treatment and a prognosis, a comparative blood profile is sometimes essential to differential diagnosis. Adam *et al.*^[1] stated that changes in the activity of a number of enzymes in serum have been investigated in many diseases of man and animals and have been found to be useful aids to diagnosis and prognosis. Haematological studies in domestic animals are also considered useful in the diagnosis of disease. The objective of the present investigation was to determine the species specific blood parameters for the domestic cat, the prevalent pet and companion animal in the country.

MATERIALS AND METHODS

18 cats, *felis domestica*, both sexes, 6-24 months old, were separately encaged at the Veterinary Clinic, Faculty of Vet. Med. University. of Khartoum. One month adaptation period was allowed during which food and water were made available for adlibitum intake and the various clinical parameters were checked and observed. Ante-mortem and post-mortem inspections were performed.

Blood

- Blood for haematological study was taken by recurrent tarsal vein puncture using sterile disposable syringes into sterile dry clean bottles containing the

anticoagulant Ethylene Diamine Tetra Acetic Acid (EDTA)

- Blood for serum chemistry was taken using sterile disposable syringes into dry clean bottles, serum was separated and kept at 15°C for analysis.
- Jugular vein blood was also collected immediately after the slaughter of the animals for both purposes above.

Haematological methods

- The RBCs, total WBCs, Hb concentration and PVC were determined^[2].

Chemical methods

- According to the following methods serum samples were analysed for cholesterol^[3], total protein^[4], albumin^[5], urea^[6], sodium and potassium^[7], GOT and GPT^[8] and ALP^[7].

Histopathological methods

- Specimens of livers, kidneys, hearts, stomachs and intestines fixed in 10% neutral buffered formalin were embedded in paraffin wax, sectioned at 5µm and stained with haematoxylin and eosin (H and E).

RESULTS

The clinical examinations, anti-mortem and post-mortem inspections and histopathological study have shown that these animals were free from disease. The results of the haematological investigations are given in Table 1.

Table 1: Normal haematological values in felines in Khartoum-Sudan

No. of cats	Hb (g 100 mL ⁻¹)	Hb (%)	WBC's (1000 cu.mm ⁻¹)	RBC's (1,000,000 cu.mm ⁻¹)	PVC (%)
18	9.09±1.60	61.72±10.19	7.70±3.30	10.75±2.39	25.89±4.86

Table 2: Normal chemistry of feline serum in Khartoum-Sudan

No. of cats	Potassium (meq L ⁻¹)	Sodium (meq L ⁻¹)	Cholesterol (mg dl ⁻¹)	T. protein (g 100 mL ⁻¹)	Albumin (g 100 mL ⁻¹)	Urea (mg 100 mL ⁻¹)
18	3.32±0.68	118.44±8.81	71.84±38.53	7.49±0.40	3.6±0.47	44.61±37.74

Table 3: Some normal enzyme activities in feline serum in Khartoum Sudan

No. of cats	SGOT (SU mL ⁻¹)	SGPT (SU mL ⁻¹)	Alkaline phosphatases (KAU mL ⁻¹)
18	43.89±9.48	11.94±8.15	85.94±2.44

Values within a column represent the Mean±SEM

The results of the chemical investigations are given in Table 2. The results of the enzyme assays are given in Table 3.

DISCUSSION

The haematological estimates determined are within the normal reference range for felines and agrees with Dunn^[9], Island^[10], the American Veterinary Laboratory^[11] and Dauphine^[12]. The potassium ion concentration agrees with that reported by the American Vet. Lab. -AVL^[11], Island^[10], Dauphine^[12] and the Michigan State University (MSU), College of Veterinary Medicine Clinical Pathology Laboratory Reference Ranges^[13], the sodium ion estimates are close but lower than those referenced by Am. Vet Lab.^[11], Island^[10], the MSU^[13] and Dauphine^[12] who concluded that low Na ion concentrations indicate no common problem in cats, while high concentrations indicate renal failure, dehydration vomiting or diarrhoea. The present cholesterol levels are within the normal range reported by the MSU^[13] Dauphine^[12] and the AVL^[11]. The total protein levels are similar to those reported by Kaplan^[14], MSU^[13], Dunn^[9] and AVL^[11]. The present albumin levels are similar to those reported by Dumas *et al.*^[5], Kaplan^[14] and MSU^[13]. Enzyme activities are similar to those reported by Cornelius and Kaneko^[15], MSU^[13], Dauphine^[12] and AVL^[11].

It is concluded that Sudanese cats in Khartoum are no different from others around the world with respect to the parameters investigated.

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