Assessment of Haematological Profiles in Apparently healthy Male Kombai Dogs in Theni District, Tamil Nadu, India

ABSTRACT

The hematological profiles of apparently healthy maleKombai dogs in Theni district was studied in this research. Twelve male Kombai dogs had their cephalic veins venipunctured to obtain blood samples, which were then analysed. Red blood cell count, haematocrit, mean corpuscular volume, mean corpuscular haemoglobin, mean corpuscular haemoglobin, and haemoglobin content were among the haematological parameters measured. The study also included a total white blood cell count, which includes eosinophils, neutrophils, lymphocytes, monocytes, granulocytes, and platelets. This information may be helpful to veterinary clinicians and biomedical researchers.

Keywords: Kombai breed, haematologicalparameters, RBC count, WBC count.

1. INTRODUCTION

In veterinary medicine, reference values are necessary for a pertinent interpretation of test results. Reference values specific to the tested species and the instruments and reagents used are necessary for accurate interpretation. Many veterinary reference laboratories opt to use published or historic values because creating their own values takes time and money. The use of these factors prevents fast and correct diagnosis and perpetuates errors (Klaassen, J.K., 1999). When selecting animals that are genetically resistant to specific diseases and environmental factors (Mmereole, 2008 and Isaac et al. 2013), haematological examination is especially helpful in determining how the environment influences blood characteristics, which may have ecological and physiological implications (Ovuru, S.S. et al. 2004). Haematological traits can be used to reliably forecast an animal's physiological state (Khan, T. A., 2005). According to Waugh et al. (2005) and Bamishiyae et al. (2009), haematological parameters are those that have to do with blood and the organs that make blood.

The haematological profile must be assessed when assessing an animal's clinical health because blood serves as the body's main transport system and the input and output material for almost all metabolic activities. (Coles, 1986; Klaassen, 1999; Schalm et al, 1975; Ihedioha et al, 2004 and Ihedioha et al, 2012) Changes in the blood picture often reflect any variations from normal caused by pathogen invasion, various types of injury, deprivation, or stress. The aim of this study was to determine the haematological profile of a male Kombai dog breed that seemed to be in good health in Theni District, Tamil Nadu. Determining the haematological profile of male Kombaidogs in the Theni District of Tamil Nadu that appeared to be in good health was the goal of this study.

2. STUDY AREA

The study area is situated at the base of the Western Ghats and is characterised by a variety of hills and ranges. A group of hills that run parallel to the Western Ghats separate the district from Kerala State to the south. The district, which spans 2871.48 km2, is situated between latitudes 9530 and 10220 north and longitudes 77170 and 77670 east. On average, the area receives 950 mm of precipitation annually. Its temperature is nice, with highs of 40 degrees Celsius and lows of 20 degrees.

3. MATERIALS AND METHOD

Blood samples were drawn from the cephalic vein of 12 male Kombai dogs at random using a venipuncture in K3 EDTA tubes. The samples were collected and analysed in the same day. However, samples were kept at 2-8°C for transport to the test laboratory. A sample of blood was used to determine red blood cell (RBC), haemoglobin (Hb), haematocrit (PCV), mean corpuscular volume (MCV), mean corpuscular haemoglobin (MCH), mean corpuscular haemoglobin concentration (MCHC), platelet count (PLT), and white blood cell count (WBC). These parameters were tested using a haematologyanalyser (Exigo) that came with Dog software. To eliminate cell lysis-related mistakes, all haematological investigations were conducted within 24 hours following sampling.

4.EXPERIMENTAL DESIGN

The study's inclusion criteria include dogs that were not taking medicine or had just finished taking it, dogs that did not have a fever or other clinical symptoms of an illness, and dogs that did not have parasite infestations according to parasitic examinations. Because the necessary population size for the study was not available, female dogs were not included.

For three months (January–March 2024), samples were taken from dogs that belonged to a private farm in Theni, Tamil Nadu, which is the breed's home tract. Dogs measuring 15–25 kg and between the ages of 1-2 years were chosen at random. The dogs' histories were reviewed, and then they had clinical and physical examinations. After determining which dogs appeared to be in good health based on the findings of physical, clinical, and parasitological investigations, the haematological profile of the canines was examined.

The male canines, who appeared to be in good health, had their whole blood samples taken for haematological analysis at the Veterinary College and Research Institute's Department of Veterinary Physiology and Biochemistry in Theni.

5. HAEMATOLOGY PROFILE

Two millilitres of blood was collected for haematology from each of the dogs by cephalic venipuncture.. To prevent clotting, the blood was placed in a sample tube containing 2 mg of ethylene diamine tetraacetic acid (EDTA). Haematological parameters such as red blood cell (RBC), haemoglobin (Hb), haematocrit (PCV), mean corpuscular volume (MCV), mean corpuscular haemoglobin (MCH), mean

corpuscular haemoglobin concentration (MCHC), platelet count (PLT), and white blood cell count (WBC), lymphocyte (LYM), monocyte (MON), neutrophil (NEU), eosinophil (EOS), and mean platelet value (MPV) were measured using a haematologyanalyser (Exigohaematologyanalyser) that came with software for dogs.

6. RESULT AND DISCUSSION

The Mean±SE, ranges of haematological (Hb, PCV, MCH, MCV, MCHC, TEC, TLC, DLC) parameters in blood ofKombai Male Dogs are given in Table 1.

Table1: Results of haematological Parameters

Haematology Parameter	**Unit**	**Mean ± S.E**
Pack cell volume	%	28.23 ± 2.59
Red blood cell count	$x10^6$ /µl	4.89 ± 0.51
Hemoglobin concentration	g/dl	11.28 ± 1.07
Mean corpuscular volume	fl	59.50 ± 0.33
Mean corpuscular hemoglobin	Pg	23.94 ± 0.39
Mean corpuscular hemoglobin concentration	g/dl	40.07 ± 0.53
White blood cell count	($\times10^3$/ µl)	14.39 ± 1.28
Lymphocyte	%	4.32 ± 0.71
Monocyte	%	1.45 ± 0.24
Neutrophil	%	9.12 ± 0.63
Eosinophil	%	0.21 ± 0.07
PLT	Lakhs	167.75 ± 13.15
MPV	fL	8.77 ± 0.24

Breed, time of sample, storage impact, age, feed type, season, management techniques, and estimating methodology all affected the various normal blood contents (Swanson, 2004). The reference values listed in Dukes' Physiology of Domestic Animals, 12th edition, were in agreement with the haematological profile. Breed variances, nutritional variations, physical conditions, and metabolic status could all be responsible for the little variations in the readings.

In this study, all the haematological parameters for the male kombai dogs were within the reference intervals of the parameters already reported for dogs and used in laboratory evaluation of clinical situations.

6. CONCLUSION

Hematological parameters in apparently healthy male dogs of kombai breed show several variations in relation to breed and age. In order to assess the animals' health and physiological condition, reference values for haematological parameters must be established. It would be difficult for the lab and veterinarian to establish and use breed-specific reference intervals for individual dog breeds, but understanding how some haematological parameters change for different breeds is crucial for clinical blood value interpretation. The current study's findings deepen our knowledge of the haematology of male Kombai dogs and could be used as reference values to assist veterinarians in properly interpreting laboratory results and tracking the health of the animals to enhance management and conservation of these breeds.

7. COMPETING INTERESTS

Authors have declared that no competing interests exist.

8. USE OF ARTIFICIAL INTELLIGENCE (AI)-ASSISTED TECHNOLOGY

The authors confirm that there was no use of artificial intelligence (AI)-assisted technology for assisting in the writing or editing of the manuscript and no images were manipulated using AI.

Ethical Approval

Animal Ethic committee approval has been collected and preserved by the author(s)

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