COMPARATIVE HEMATOLOGICAL STUDIES OF BOTH MALE AND FEMALE GOATS (Capra *aegagrus hircus*)

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ABSTRACT
About 6 months study was undertaken to determine various hematological parameters of male and female indigenous goats (*Capra aegargus hircus*) in CUTM campus Bhubaneswar. Blood samples were collected from goats of different sex. The whole blood was analyzed for hematology, and plasma and serum samples for biochemical analysis. Results: The study found higher number of Hb, RBC, PCV, and MCHC in male goats while WBC, MCV and MCH in female goat. The results of the present study demonstrate the normal haematological values of two sexes of local goat breeds. Present results stated some significant variation of parameters between two goats whereas some shows no significant variation at all.

KEYWORDS: biochemistry, hematology, indigenous goats

INTRODUCTION

Charles Darwin had recognized a few numbers of traits which made domesticated species separate from the wild ancestors. He was the first person who has recognized difference between the conscious selective breeding in which human are directly being selected for desirable traits unconscious selection where traits evolve as a byproduct of natural selection or from selection on their traits. The domestic goat (*Capra aegagrus hircus*) is a subspecies of *C. aegarus* domesticated from the wild goat of Eastern Europe and Southwest Asia belonging to Bovidae family. There are about more than 300 distinct breeds of goat. Goat is one of the oldest domesticated species of animals and has been used for meat, milk and skins in the world (Coffey *et al.*, 2010).
Blood is a reliable and important medium for assessing the health status of individual animals. Haematological analysis is a test which is an inexpensive and through this analysis health status of an animal can detected at an earlier stage without harming the animals. The hematological and biochemical values are very important for evaluation of normal physiological status of animal. However, no or very few works has been undertaken in relation with indigenous Black Bengal goat. The differences has further under lined the need to establish an appropriate physiological baseline values for various breeds of goats which will help in realistic evaluation of the management practices, nutritional and diagnosis of health conditions (Babeker, 2013).

MATERIALS AND METHODS

The goats used in this study were kept in the free captive conditions in the CUTM campus. This study was made on five goats in sex each. Blood samples were collected from the jugular vein of the species by the help of veterinary doctor. Blood samples were transferred into two tubes containing EDTA vials for haematological analysis. All the samples were transferred into the laboratory as quick as possible in ice.
Haematological profile included total count of RBCs, WBCs, Hb%,PCV, which are estimated using the techniques described (Campbell, 2004). RBC, WBC counting was done by haemocytometer, the estimation of Hb% was carried out by haemometer and packed cell volume was measured using centrifuge machine.

RESULTS AND DISCUSSION:

Haematology is the study of blood and blood related diseases and prevention of diseases related to blood. By studying these parameters of goat help in detection and diagnosis of diseases at an earlier stage. In this investigation hematological parameters like RBC, WBC, Hb, PCV, MCV, MCH, MCHC,are analysed in both male and female goat and comparison of haematological parameters in between male and female is also presented .

The mean haemoglobin concentration of male goat is 8.78 g/dl with a minimum range of 8.1 to the maximum range of 9.5 g/dl and female goat have concentration of haemoglobin is 8.16 g/ dl. It is probably due to direct effect of sex, hormones both estrogen and androgens, on erythropoiesis (Akinrinmade and Akinrinde, 2012). Eestrogens in females which have an inhibitory effect on secretion of erythropoietin which is main stimulant of red cell production (Alessandro *et al.*, 2011).Also the androgens (testosterone) have a stimulatory effect on EP secretion. Both these factors tend to keep the red cell count high in males which in turns causes high haemoglobin content.

The mean value of RBC count in male and female goats showed .The mean value of RBC count in male is 7.2 M/µl with a minimum range of 6 to maximum range 7.9 M/µl whereas the females have mean of 5.18 M/ dl with a minimum range of 4.7 to maximum range 5.6 M /dl. In female goats, there is an inhibitory effect by oestrogens on erythropoietin which is a stimulator of RBC production whereas in male stestosterone has got a stimulating effect on erythropoietin thus increases the RBC production in males (Edjtehadi, 1978). RBC count increases in male in comparison to female to supply proper oxygen in them.

The mean value of PCV of males is 25.28 g/dl of PCV male goat with a minimum range of 21.4 to a maximum range of 28 g/ dl where as the females have mean of 24.78 g/dl with a range of 24.3-25.4 g/dl. As the females goats have low haemoglobin level, pregnancy and sometimes nutritional deficiency they have low PCV as compared to male goats (Giuseppe *et al.*, 2010).

Mean corpuscular haemoglobin mean value of male goat is 12.24Pg with a maximum range of 11.21-13.5Pg .while the mean value of female goat is 15.85Pg with maximum range of 14.10 and minimum 17.9 Pg. As the female goats have low haemoglobin than males then it should show low MCH value than males but here female goats showing more MCH than males which is commonly a sign of anaemia which is due to the deficiency of vitamin B mainly B12 and folic acid (Jyoti and Mahanta, 2013).

Mean value of mean corpuscular haemoglobin concentration in male goat is 34.86 g/dl with a minimum range of 33.33-37.85 g/ dl. While in female goat the mean is 32.94 g/dl ranging from minimum value of 31.10 to maximum value of 35.95 g/ dl. Another cause of low MCHC can be due of thalassemia which causes abnormal haemoglobin production (Lewis and Am, 1976). The mean WBC value of male goat is 4.8 dl/mm^3 while female goat is 5.8 dl/mm^3 respectively.

Table.3 Comparison of hematological parameters values of male and female goat

Sl No.	Haematological parameters	Mean value (Male)	Mean value (Female)	P-VALLE
1	Hb (g/dl)	8.78	8.16	0.061
2	RBC (M/mm^3)	7.2	5.18	0.00056
3	PCV (L/L)	25.28	24.78	0.35
4	MCV (fl)	35.13	48.09	0.0009
5	MCH (pg)	12.24	15.86	0.004
6	MCHC (%)	34.86	32.94	0.113
7	WBC (dl/mm^3)	4.8	5.8	0.044

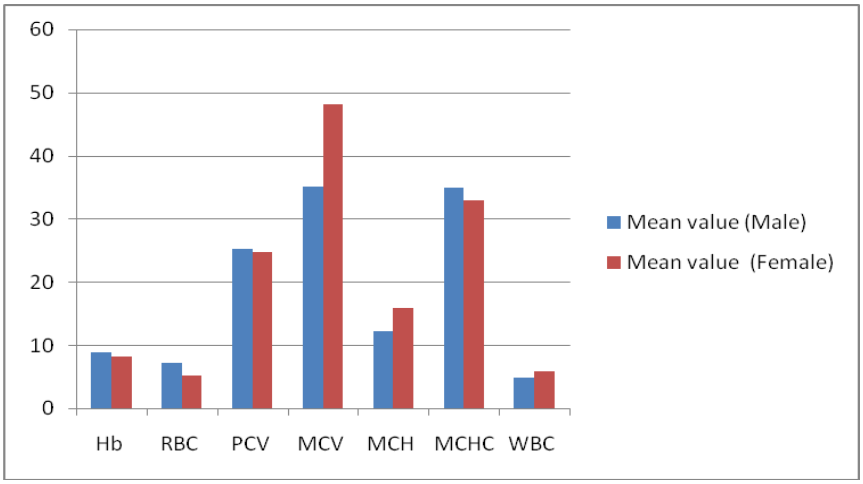

Figure-1 Showing the comparative hematological values between male and female goat.

According to the current study, the hematological and biochemistry values of Black Bengal goat and Jamnapari goat were found within the normal ranges. These results are supported by the Kaneko *et al.*, (1997). The present finding of the number of RBC, WBC, Hb and MCV are agreed by Zumbo *et al.*, (2011).

CONCLUSION

The results of this study provide the knowledge of the characteristic of haematological parameters of *C. aegagrus* from the different habitats. Present study represents the normal values of haematological parameters of indigenous goats breed, Black Bengal goats. Sex showed relatively influence on the hematological values of goat studied exciting fluctuations in all the hematological parameters of both sexes.

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