Haryana Vet. **49** (December, 2010), pp 38-39

Research Article

STUDIES OF DIFFERENT HAEMATOLOGICAL PARAMETERS IN MALE BEETAL GOATS AT DIFFERENT PHYSIOLOGICAL STAGES

FOZIA SHAH, MEENAKSHI GUPTA[1] and J. S POONIA[2]
Department of Veterinary Physiology, College of Veterinary Sciences
CCS Haryana Agricultural University, Hisar-125 004

ABSTRACT

The present study was conducted with an objective to establish normal haematological values in male Beetal goats at various physiological stages of life. Twenty four male Beetal goats were divided in to four groups with six male goats at various physiological stages viz. pre weaning, post weaning, pre pubertal and post pubertal. Blood samples were examined for haemoglobin, packed cell volume, erythrocyte sedimentation rate, total leucocyte count and total erythrocyte count using standard techniques. The haemoglobin, total erythrocyte count, total leucocyte count and packed cell volume were maximum in pre weaning stage as compared to rest of the stages in the study. The values of haemoglobin, total leucocyte count and packed cell volume did not exhibit any significant change in between post weaning, pre pubertal and post pubertal stages of the study.

Key words: ESR, Hb, PCV, TEC, TLC, male Beetal goat

Goat is valued for milk and meat production as well as for providing mohair and cashmere. Evaluation of haematological attributes serves as an index of general physiology, nutrition and health status of animals. The haematological profile of goat may be influenced by several physiological factors especially the age, sex, breed and nutrition (Tambuwal *et al.*, 2002). The present work was underteken to study haemotological parameters in goats at different physiological stages.

MATERIALS AND METHODS

Male Beetal goats (n=24) at various physiological stages were maintained under standard feeding and management conditions at Goat Farm, CCS Haryana Agricultural University, Hisar. Animals were also allowed to graze outside. All the animals used for the study were housed in a clean and well ventilated shed having concrete floor with proper feeding and watering. Blood samples were collected from animals prior to watering and feeding from jugular vein under aseptic conditions in heparinized vials. The animals were divided in four groups at various physiological stages viz. pre weaning (6), post weaning (6), pre pubertal (6) and post pubertal (6). Haemoglobin (Hb), total erythrocyte count (TEC), total leucocyte count (TLC), packed cell volume (PCV) and erythrocyte sedimentation rate (ESR) were estimated in fresh samples by standard techniques (Jain, 1986).

[1]Correspondent author
[2]Department of Animal Genetics and Breeding

RESULTS AND DISCUSSION

Average Hb values at various physiological stages ranged from 7.33±0.06 to 7.85±0.18 gm% with the highest value in pre weaning stage and the lowest in post weaning stage (Table 1). Mean value of Hb was 7.80±0.10 and 7.76±0.21 gm% in pre pubertal and post pubertal stages, respectively. There was a significant decrease in Hb value from pre weaning to post weaning stage and a significant increase from post weaning to pre pubertal stage. Average PCV (%) ranged from 27.66±0.91 to 30.33±0.80 with the highest value in post pubertal stage and the lowest in post weaning stage (Table 1). There was a significant difference in PCV between post weaning and post pubertal stages and non significant difference was observed between pre weaning, pre pubertal and post pubertal stages. The statistical analysis of the data revealed non significant difference in ESR values during all four stages. Standard ESR value is not applicable to goats because there is no settling of goat RBCs within one hr (Smith and Sherman, 2009). The results are analogous for Hb, TEC and PCV to the studies of Nangia *et al.* (1968), Selvaraj *et al.* (2004) and Phulia *et al.* (2007) in beetal goat, Mecheri sheep and Gujrata goats, respectively. The possible reason of this increase may be polycythemia (Scarborough, 1932; Gautam, 1965; Holman, 1965). A significant decrease in Hb, RBC and PCV values at post weaning is in treaty with Sandhu *et al*. (2001) who

Table 1
Haematological values in male Beetal goats at various physiological stages

Stage	Hb (gm%)	TEC ($\times10^6$/mm^3)	TLC ($\times10^3$/mm^3)	PCV(%)	ESR (mm/h)
Pre weaning	$7.85^{a}\pm0.18$	$13.78^{a}\pm1.00$	$7.96^{a}\pm0.17$	$30.00^{ab}\pm0.77$	0.00±0.00
Post weaning	$7.33^{b}\pm0.06$	$11.88^{b}\pm0.20$	$7.45^{a}\pm0.29$	$27.66^{b}\pm0.91$	0.00±0.00
Pre pubertal	$7.80^{a}\pm0.10$	$11.95^{b}\pm0.25$	$7.73^{a}\pm0.10$	$29.50^{ab}\pm0.95$	0.00±0.00
Post pubertal	$7.76^{ab}\pm0.21$	$12.23^{ab}\pm0.51$	$7.54^{a}\pm0.26$	$30.33^{a}\pm0.80$	0.00±0.00

Mean values bearing different superscripts in a column differ significantly ($P<0.05$)
Hb - Haemoglobin; TEC - Total erythrocyte count; TLC - Total leucocyte count; PCV - Packed cell volume; ESR - Erythrocyte sedimentation rate

also reported a decline in Hb, RBC and PCV values with age as compared to base values in Black Bengal goats. This might be due to rapid growth of animal and less nutrient supply from roughage during grazing and non supplementation of iron. Average TEC ranged from 11.88±0.20 to 13.78±1.00 millions/mm3 with the highest value during pre weaning stage and the lowest during post weaning stage (Table 1). A significant decrease in TEC count was observed between pre weaning to pre pubertal stage and a non significant increase was observed between pre weaning and post pubertal stages.

Average TLC ranged from 7.45±0.29 to 7.96±0.17 thousand/mm3 with the highest count during pre weaning stage and the lowest during post weaning stage (Table 1). Non significant difference was observed during all four stages which is in agreement with the findings of Nangia *et al.* (1968) and Yadav *et al.* (2002). Vaidya *et al.* (1970) also reported that irrespective of sex, the leucocytes count was higher in kids than in adult animals. The possible explanation for this could be that young animals have better resistance to diseases (Addass *et al.*, 2010) and leukocytes are complement to immune system at young age. There was non significant increase in TLC count at pre pubertal stage as compared to post weaning stage in this study. The increased TLC count may be due to increased bone marrow activity and release of certain factors called LIF (leucocytosis inducing factors) and CSF (colony stimulating factors) which are known to increase TLC activity and cell mobilisation into circulation (Waziri *et al*., 2010).

It may be concluded from the study that the values of Hb, TEC, TLC and PCV did not exhibit any significant change among post weaning, pre pubertal and post pubertal stages and were lower than those in pre weaning stage.

REFERENCES

Addass, P.A., Perez, I.K.A., Midau, A., Lawan, A.U. and Tizhe, M.A. (2010). Haemato-biochemical findings of indigenous sheep breeds in mubi Adamawa state, Nigeria. *Global Veterinaria* **4**:164-167.

Gautam, O.P. (1965). Haematological norms in goats. *Indian J. Vet. Sci.* **35**: 173-177.

Holman, H.H. (1965). Changes associated with age in the blood picture of calves and heifers. *Br. Vet. J.* **11**: 91

Jain, N.C. (1986). Schalm's Veterinary Haematology. (4th edn.), Lea and Febiger, Philadelphia, USA.

Nangia, O.P., Agarwal, V.K. and Singh, A. (1968). Studies on blood cellular constituents of female Beetal goats from birth to over five years of age. *Indian J. Vet. Sci.* **38**: 616-625.

Phulia, S.K., Singh, G., Upadhyay, R.C., Kumar, P. and Mishra, R.P. (2007). Comparative study of haemograms and biochemical constituents in kids and lambs. *Indian J. Anim. Sci.* **77**: 56-58.

Sandhu, A.K., Saini, A. and Randhawa, S.S. (2001). Haematobiochemical studies in healthy goats. *Indian Vet. J.* **78**: 590-593.

Scarborough, R.A. (1932). The blood of cattle, sheep and goat. *J. Bio. Med.* **69**: 323-327.

Schalm, O.W., Jain, N.C and Carroll, E.J. (1986). Veterinary Haematology. (3rd edn.), Lea and Febiger, Philadelphia, USA.

Selvaraj, P., Mathivanan, R. and Nanjappan, K. (2004). Haematological and biochemical profile of Mecheri sheep during winter and summer. *Indian. J. Anim. Sci.* **74**: 718-720.

Smith, M.C and Sherman, D.M. (2009). Goat Medicine. (2nd edn.), Wiley- Blackwell, State Avenue, USA.

Tambuwal, F.M., Agale, B.M. and Bangana, A. (2002). Haematological and biochemical values of apparently healthy Red Sokoto goats. Proc. 27th Annual Conference Nigerian Society of Animal Production (NSAP), 17-21 March, (2002), FUTA, Akure, Nigeria. pp. 50-53.

Vaidya, M.B., Vaghari, P.M. and Patel, B.M. (1970). Haematological constituents of blood of goats. *Indian Vet. J.* **51**: 642-647.

Waziri, M.A., Ribadu, A.Y. and Sivachelvan, N. (2010). Changes in the serum proteins, haematological and some serum biochemical profiles in the gestation period in the Sahel goats. *Veterinarski Arhiv.* **80**: 215-224.

Yadav, S.K., Kundu, A., Ahlawat, S.P.S., Senani, S., Chatterjee, R.N., Saha, S.K., Bharati, D., Jay Kumar, S. and Sunder, J. (2002). Haematological parameters of indigenous goats of Andaman. *Indian Vet. J.* **79**: 665-667.