

*Short communication*

## **HAEMATOLOGY OF THE WEST AFRICAN DWARF SHEEP UNDER TWO DIFFERENT MANAGEMENT SYSTEMS IN NIGERIA**

**F.O. OLAYEMI\*, FAROTIMI J.O AND O.A. FAGBOHUN**

Faculty of Veterinary Medicine, University of Ibadan, Ibadan, Nigeria.

*The haematological parameters of the West African Dwarf (WAD) sheep under intensive and extensive management systems in Nigeria were determined. The intensively reared animals showed higher ( $P<0.001$ ) Packed Cell Volume haemoglobin concentration and mean corpuscular volume ( $P<0.01$ ) than those under extensive management. Both groups of animals however had similar mean corpuscular haemoglobin, mean corpuscular haemoglobin concentration; Red blood cell, Total white blood cell, Lymphocyte, neutrophil, eosinophil and monocyte counts.*

Key words: - Haematology, West African Dwarf Sheep, Intensive, Extensive, Management

In our earlier studies (Olayemi and Oyewale, in press), the influence of management on the haematology of the White Fulani Cattle was determined. The intensively reared animals showed higher packed cell volume (PCV), red and white cell counts but lower osmotic fragility, mean corpuscular haemoglobin than those under extensive management.

It was thought necessary to extend this study to the WAD sheep. The WAD sheep are found throughout the humid areas of West Africa. The coat is usually white in colour or a mixture of black and white. They weight about 30kg. Although there are a number of studies on the normal haematology of the West Africa Dwarf Sheep (Oduye, 1976, Durotoye 1987, Oyewale, 1991), there is no report on the influence of management on the haematology of these animals. The present study was therefore undertaken to determine the effect of management systems on the haematology of the adult WAD sheep.

### **MATERIALS AND METHODS**

A group of 20 intensively managed adult WAD sheep of both sexes belonging to the International Livestock Research Institute (ILRI); Ibadan, Nigeria were used. The animals were all clinically healthy and were housed in pens at night and released into a fenced paddock for grazing on improved grass/legume pasture during the day. The feed was supplemented with maize and saltlick. They were allowed free access to water. The animals were treated against nematode parasites at 3 months intervals with fenbendazole (Panacur<sup>®</sup> Hoeschst, Germany).

The second group of 20 WAD sheep used for this study were reared under the traditional extensive husbandry management system. They were grazed on free range which was not supplemented. Although they had no access to veterinary care, they were apparently healthy and in good bodily condition. They were sampled at the Bodija abattoir in Ibadan, Nigeria before they were slaughtered. This study was carried out in the dry season.

Blood from these sheep was collected from the jugular vein into bottles containing heparin (20 units/ml). Red Blood Cell (RBC) and White Blood Cell (WBC) were determined using the haemocytometer. Packed Cell Volume (PCV) was estimated by microhaematocrit method and haemoglobin (Hb) concentration by the cyanmethaemoglobin method. Mean corpuscular Volume (MCV), mean corpuscular haemoglobin (MHC) and mean corpuscular haemoglobin concentration (MCHC) were calculated from the values of RBC, PCV, and Hb (Schalm et al, 1986). Thin blood smears were fixed in alcohol and stained with Giemsa stain for differential WBC counts.

Data obtained were statistically analysed by Student's t-test.

### **RESULTS**

The erythrocyte values of the intensively and the extensively managed WAD sheep are shown in Table 1. The value of PCV, Hb concentration and MCV were significantly higher ( $P<0.001$ ,  $P<0.001$  and  $P<0.01$  respectively) in the intensively than the extensively managed sheep. The RBC count, MCH and MCHC were however similar in the two groups of sheep.

\*Address for correspondence: Dr. F.O. Olayemi, Department of Veterinary Physiology and Pharmacology, University of Ibadan, Ibadan, Nigeria.

Table II presents the leucocyte values of the intensively and extensively managed WAD sheep. The total WBC, lymphocyte, neutrophil, eosinophil and monocyte counts are similar in both groups of animal.

<b>TABLE 1</b>		
<b>RBC PROFILE (MEAN ± S.D) OF THE WAD SHEEP UNDER INTENSIVE AND EXTENSIVE MANagements</b>		
<b>PARAMETERS</b>	<b>INTENSIVE (20)</b>	<b>EXTENSIVE (20)</b>
RBC (X10 <sup>6</sup> /ul)	8.17± 1.28	7.92±0.81
PCV (%)	24.9±1.95	20.15±2.59*
Hb (g/dl)	7.38 ± 1.90 (16)	6.19±1.70*
Mcv (fl)	31.71± 8.90	25.02± 5.36**
MCH (pg)	8.87±2.61 (16)	7.92±1.85
MCHC (g/dl)	30.20±11.12(16)	30.99±5.85
Number of animals in parenthesis, Value significantly different from intensive Management at *P<0.001 and **P<0.01		
<b>TABLE 2</b>		
<b>LEUCOCYTE VALUES (MEAN ± S.D) OF THE WAD SHEEP UNDER INTENSIVE AND EXTENSIVE MANagements</b>		
<b>PARAMETERS</b>	<b>INTENSIVE (20)</b>	<b>EXTENSIVE (20)</b>
TOTAL WBC (X10 <sup>3</sup> /ul)	15.54± 3.76	15.35±1.69
Lymphocyte (X10 <sup>3</sup> /ul)	8.13±2.37	7.87±2.29
Neutrophil (X10 <sup>3</sup> /ul)	7.28 ± 1.92	7.86±2.04
Eosinophil (X10 <sup>3</sup> /ul)	0.28± 0.22	0.18± 0.01
Monocytes (X10 <sup>3</sup> /ul)	0.22±0.09	0.16±0.03
Basophils (X10 <sup>3</sup> /ul)	0	0
<b>Number of animals in parenthesis</b>		

and in the extensively managed WAD sheep respectively in the present study were higher than the normal values of between 4x10<sup>3</sup>/ul to 12x10<sup>3</sup>/ul reported for the temperate breeds of sheep (Schalm et al, 1986). They are however similar to the value of 15.25x10<sup>3</sup>/ul reported for the WAD sheep (Oduye, 1976).

The Leucocyte counts in the present study (Table II) are similar in the intensively and extensively reared WAD sheep. It may be that management systems has no effect on the leucocyte values in this species of animal. This is contrary to observation made in the White Fulani cattle in which those reared intensively had lower leucocyte counts than those on extensive management (Saror and Coles, 1973). The observation made by Saror and Santago, 1981, that Large white Pigs under extensive management system had lower total leucocyte count and higher eosinophil count than those managed intensively also disagrees with the findings of the present study.

## DISCUSSION

The higher PCV, Hb concentration and MCV in the intensively than in the extensively managed WAD sheep in this study (Table 1), is similar to observations made in the White Fulani cattle by Saror and Coles, 1973 and by Rekwot et al, 1987. They reported that the white Fulani Cattle under intensive management had higher RBC, Hb concentration and PCV than those managed extensively. The observation made in the present study that the PCV, Hb concentration and MCV were higher in the intensively than in the extensively reared WAD sheep is probably due to the higher plane of diet given to the former group of animal. The improved grass/legume which was supplemented with maize and salt lick that was given to the WAD sheep under intensive management was definitely of higher quality than the free range pasture given to the extensively managed WAD sheep which was not supplemented.

The mean values of 15.54x10<sup>3</sup>/ul and 15.35x10<sup>3</sup>/ul obtained for the total WBC count in the intensively

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