Haematological study of a composite cattle population reflects pre-slaughter-induced breed and sex differences

Aro, S. O.

Department of Animal Production and Health, Federal University of Technology, Akure, Nigeria.

Corresponding Author: soaro@futa.edu.ng; sambolaro@yahoo.co.uk

Target Audience: Butchers, Cattle breeders, Abattoir and lairage managers, Researchers and Animal Physiologists.

Abstract

Sixty matured animals drawn from a composite population of White Fulani, Sokoto Gudali and Red Bororo cattle were used to evaluate haematological responses to pre-slaughter conditions. Blood samples were collected prior to slaughter and analysed to compare the blood profiles of the three cattle breeds. The results showed that the packed cell volume (PCV) varied significantly (p<0.05) among the three breeds, between the two sexes and in the interaction between breed and sex. The PCV, red blood cells (RBC), white blood cells (WBC) and haemoglobin (Hb) values were significantly (p<0.05) higher in the male than in the female cattle among the three breeds. All the cattle breeds had abnormally high WBC (21.01±1.07 - 22.43±1.69 x10^3/mm^3) and monocyte (9.04±0.20 - 9.33±0.33%) values prior to slaughter. The osmotic fragility of the red blood cells showed significant (p<0.05) breed and the sex effects with the males having a more osmotically stable red blood cells under hypotonic condition than the females. The males had higher whole blood viscosities but lower plasma and serum viscosities than the females while the female Red Bororo had higher whole blood, plasma and serum viscosities than their males. Conclusively, the experiment established the minimum and maximum osmotic fragility for these breeds of cattle at 0.50 and 0.30% saline concentration respectively. A case of pre-slaughter leucocytosis and monocytosis was observed. The female Sokoto Gudali were more composed and less fretful than the male in the face of potential danger to life because of their lower monocyte values and would hence produce meat of better quality.

Keywords: Blood viscosity, cattle breeds, erythrocytes, osmotic fragility.