Blood haematological profile and meat colour of calves slaughtered in summer and autumn season*

Z. Litwińczuk1, M. Florek2, M. Kędzierska-MatysekB, P. Skałecki2

1 Department of Cattle Breeding, 2 Department of Commodity Sciences and Animal Raw Materials Processing, University of Life Sciences in Lublin, Lubelska 13, 20-950 Lublin, Poland

Abstract

The purpose of this study was to compare the haematological profile and meat colour of calves slaughtered in summer and autumn. The material covered 42 calves chosen randomly i.e. 22 slaughtered in summer (June-August) and 20 in autumn (October-December). Haematological analyses included haematocrit (HCT), haemoglobin level (HGB), red blood cells (RBC), white blood cells (WBC) and platelets (PLT). The morphology of the erythrocytes and platelets, and differentiation of leucocytes were examined. The colour of meat was evaluated instrumentally by Minolta CIE L*a*b* and haematin pigment content was determined.

The blood haemoglobin content in calves in the compared seasons was similar (11.3 g/L) and found within a normal range. Blood of calves from the autumn season showed higher HCT, RBC, and MCV values with concurrent lower MCH and MCHC values in comparison to the summer season. Blood of calves slaughtered in summer showed a higher content of WBC and a significantly higher percentage of lymphocytes as against blood of calves from the autumn. Meat of calves from the summer season was paler (higher L* value), and had a significantly (p ≤ 0.05) higher proportion of yellowness (b*). A brighter colour of meat from calves presented for slaughter in the summer season was noted along with a lower content of haematin pigments. Significant correlations were found between haematological variables (HGB, HCT and RBC, particularly) and haematin pigment content and meat lightness (L*) and redness (a*).

Key words: calf, blood, haematological profile, meat colour, season

Introduction

Currently, most veal is produced from calves whose age ranges from a few up to a dozen weeks. Generally, these animals are of dairy breeds, mostly bull calves, fed milk exclusively or a milk replacer. In Poland, there is no tradition of calf fattening that aims at higher slaughter mass (about 200 kg). Most commonly, calves are fattened up to ca 80 kg body mass (Litwińczuk and Szulc 2005). According to the Central Bureau for Statistics (CBS) (2005), the weight of calves intended for slaughter ranges between 71-78 kg

* This work was funded by the Ministry of Science and Higher Education (research project No. 2 P06Z 044 30)