

Blood group, transferrin and haemoglobin polymorphism  
in domestic breeds of the sheep and evaluation of the usefulness  
of these markers for parentage control

S u m m a r y

The aim of the study was to determine blood group, transferrin and haemoglobin polymorphism in 7 breeds of the sheep raised in Poland, and to evaluate the usefulness of these genetic markers for parentage control. We studied data on the polymorphism of erythrocyte antigens in 7 blood group systems (A, B, C, D, M, R, SI), transferrin polymorphism (TF) and haemoglobin polymorphism (HBB) in 2962 sheep representing 7 breeds: Blackheaded (251 animals), Polish Merino (390), Olkuska sheep (108), Polish Longwool sheep (866), Polish Mountain sheep (368), Polish Lowland sheep (756) and Wrzosówka (223). The frequency of particular alleles in each blood group system was used to calculate the degree of heterozygosity ( $h_k$ ), the polymorphic information content (PIC) and the probability of parentage exclusion (PE) including the possibility of analysing both parents. The mean degree of heterozygosity (H) and combined probability of exclusion ( $PE_c$ ) were calculated based on all 9 loci. The mean degree of heterozygosity (H), calculated based on 9 loci, showed that the greatest differences occurred in the Wrzosówka population ( $H=0.4935$ ) and the smallest differences in the Blackheaded population ( $H=0.4375$ ). The calculated H values were slightly lower than those found in earlier studies on the genetic structure of this breed. The calculated  $PE_c$  value, which ranged from 0.9590 in Blackheaded to 0.9830 in Polish Mountain sheep, shows that the analysed genetic markers are highly useful for parentage verification in the main breeds of sheep raised in Poland.