

Content of functional components in milk from goats kept indoors on zero grazing vs. limited grazing

S u m m a r y

The aim of the study was to elucidate the functional components in the milk of Polish White Upgraded breed goats maintained according to the two most popular systems. The animals were either kept in confinement all year round, with zero grazing in summer or indoors in winter and limited grazing in summer. Diets of goats from both groups were well balanced in respect of nutritional value. Milk was examined for basic composition, hygienic quality, functional whey proteins and fatty acids as well as for antioxidants and fat quality traits. Apart from this, the effect of polymorphic variants of alpha S₁ casein on functional milk components was evaluated. Although the diet of both groups of goats contained over 20% of crude fibre, transition from conserved feeds to green forage resulted in a significant decrease in milk fat content. Milk protein content increased slightly in goats from both groups, coinciding with a parallel increase in casein and whey protein content. However, no significant differences were found in the content of examined whey proteins (i.e.: A-LA, B-LG, Lf) depending on the maintenance system. Transition to green forage caused a moderate increase in functional fatty acids, as can be expected when green forage is supplemented with concentrates but only in goats fed indoor alfalfa with grass forage (zero grazing). Their milk fat contained significantly more TVA, LA, CLA 9c11r, LNA and EPA than that of goats grazing pasture during part of the day (limited grazing). The pasture plants reached maturity before alfalfa green resulting in the grazed goats' diet having a considerably higher crude fibre content, which negatively affected the biosynthesis of CLA and other functional fatty acids, although the amount of concentrates fed to both groups of goats was exactly the same. Alpha S₁ casein genotypes significantly affected the content of milk protein and the majority of functional fatty acids. The effect of casein genotype on functional components was independent of the maintenance system.