

THE EFFECT OF MILK PROTEINS ON MILK COAGULATION PROPERTIES IN ESTONIAN DAIRY BREEDS

Ivi Jõudu*, Merike Henno, Sirje Värvi, Haldja Viinalass, Tõnu Püssa, Tanel Kaart, David Arney, Olav Kärt
*Estonian University of Life Sciences, Institute of Veterinary Medicine and Animal Sciences,
IKreutzwaldi St., Tartu 51014, Estonia*

*Corresponding author: tel. +372 7313471; fax. +372 7313477; e-mail: ivi.joudu@emu.ee

Summary. Coagulating properties of milk have influence on cheese-making ability, cheese yield, and its quality. The aim of this study was to find the effects of major milk proteins contents and their genetic variants on milk rennet coagulation properties in Estonian dairy breeds. During the years 2001-2005 a total of 1,269 cows were on repeated occasions sampled ($n = 8,282$). Higher contents of milk protein, total casein, the casein number, and α_{S1} -, β -, and κ -Cn, and β -Lg, reduced the rennet coagulation time and formed a firmer curd. A higher proportion of κ -Cn with respect to α_{S1} -Cn and β -Cn assisted in forming a firmer curd. All measured rennet coagulation parameters were significantly better for the κ -Cn BB, and worse for the κ -Cn AA, AE, and EE genotypes. Noncoagulated milk originated mainly from cows possessing κ -Cn AA genotype. Better milk coagulation properties among ER and EN cows, compared to EHF cows, are explainable by a higher frequency of the κ -casein B allele, associated with better coagulation properties, and ER cows also recorded higher contents of milk proteins, compared to EHF cows.

Key words: milk rennet coagulation, milk proteins, casein, noncoagulated milk.