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Cheese making relies on milk proteins to form structure

Protein composition of milk affects coagulation and consequently cheese yield according to a study in the Journal of Dairy Science®

Philadelphia, July 20, 2020 – Cheese production relies on coagulation of milk proteins into a gel matrix after addition of rennet. Milk that does not coagulate (NC) under optimal conditions affects the manufacturing process, requiring a longer processing time and lowering the cheese yield, which, in turn, has economic impact. In an article appearing in the *Journal of Dairy Science*, scientists from Lund University studied the protein composition of milk samples with different coagulation properties to learn more about why only some milk coagulates with rennet.

The authors of this study analyzed protein composition in NC and coagulating milk samples from 616 Swedish Red cows. They reported that the relative concentrations, genetic variants, and posttranslational modifications of the proteins all contribute to whether rennet could induce coagulation in each sample. The NC milk had higher relative concentrations of α-lactalbumin and ß-casein and lower relative concentrations of ß-lactoglobulin and κ-casein when compared with coagulating milk.

“The non-coagulating characteristics of milk relate to protein composition and genetic variants of the milk proteins,” said first author Kajsa Nilsson, PhD, Lund University, Lund, Sweden. “Roughly 18 percent of Swedish Red cows produce noncoagulating milk, which is a high prevalence. Cheese-producing dairies would benefit from eliminating the NC milk from their processes, and breeding could reduce or remove this milk trait,” said Nilsson.

These results can be used to further understand the mechanisms behind NC milk, develop breeding strategies to reduce this milk trait, and limit use of NC milk for cheese processing.

Notes for editors

The article is “Effects of milk proteins and posttranslational modifications on noncoagulating milk from Swedish Red dairy cattle,” by K. Nilsson, L. Buhelt Johansen, D.J. de Koning, S.I. Duchemin, M. Stenholdt Hansen, H. Stålhammar, H. Lindmark-Månsson, M. Paulsson, W.F. Fikse, and M. Glantz (https://doi.org/10.3168/jds.2020-18357). It appears in the *Journal of Dairy Science*, volume 103, issue 8 (August 2020), published by FASS Inc. and Elsevier.

It is available at www.journalofdairyscience.org/article/S0022-0302(20)30454-9/fulltext.

Full text of the article also is available to credentialed journalists upon request. Contact Eileen Leahy at +1 732 238 3628 or jdsmedia@elsevier.com to obtain copies. Journalists wishing to interview the authors should contact the corresponding author, Kajsa Nilsson, Lund University, at kajsa.nilsson@food.lth.se.

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