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Transfer of milk fatty acids to Pecorino Siciliano cheese

Gabriele Tornambé, Antonino Di Grigoli, Francesca Mazza, Maria L. Alicata, Adriana Bonanno

Dipartimento Demetra, Università di Palermo, Italy

Corresponding author: gtornambe@unipa.it

In previous studies it was observed that milk fatty acid (FA) composition is mainly affected by diet, and when ruminants graze pasture the percentages of polyunsaturated FA and conjugated linolenic acid (CLA) are higher than in milk from preserved forage. The maintenance in the cheese of the beneficial FA profile of milk from grazing ruminants is advisable. Little number of study exists concerning the effect of milk processing conditions on cheese FA profile, but no study was done with regard to Pecorino Siciliano cheese. The aim of this study was to evaluate the transfer of FA from ewes milk to cheese manufactured according to the Pecorino Siciliano technology, in order to verify if the cheesemaking process could modify the FA profile of cheese, as yet observed by other authors for CLA and C18:1 isomers. Bulk milk from Comisana ewes grazing a spring pasture was processed six times during three consecutive weeks. For each cheesemaking, the 48-h bulk milk was divided equally, one part was processed as raw milk and the other one was pasteurized (72°C for 20 s) and inoculated with a starter culture. FA transfer from milk to cheese did not seem to be greatly affected by cheesemaking technology also when milk was treated by pasteurization. However, some significant differences were recorded for C11:0 ($P=0.0434$) and C14:1c9 ($P=0.0132$) that resulted higher in cheese than in milk. Also some isomers of CLA, such as C18:2 t-9, c-11 and CLA C18:2 t-11, t-13, resulted higher in cheese than in milk ($P=0.058$ and $P=0.0058$, respectively), but the difference reached the significance only between milk and cheese from raw milk, probably as consequence of a different activity between natural microflora and added microorganisms. This trial showed that during the cheesemaking the totality of milk FA are transferred into the cheese even when the milk is processed after a thermal treatment. Nevertheless, some variations had been observed with regard to CLA isomers, in line with other findings on sheep cheese produced in other Italian regions.

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Field study on milk fat and protein ratio reversion in dairy cattle

Federico Righi, Federico Rossi, Afro Quarantelli

Dipartimento di Produzioni Animali, Biotecnologie Veterinarie, Qualità e Sicurezza degli Alimenti, Università di Parma, Italy

Corresponding author: federico.righi@unipr.it

Milk fat and protein ratio reversion (MFPR) has been related with insufficient dietary fibre quantity and quality, excess of concentrates and sorting by the cows. The aim of the present work was to study the effects of nutrition and season on the occurrence of MFPR. Three dairy herds (A,B,C) similar for dimension, parity and days in milk, producing milk for direct consumption, fed corn silage based rations were observed over a period of 12 months. Herds were fed similar diet but differed for nutritional management during summer period. During this period herds were fed 3 different levels of fat, NSC and NDF: herd A received a diet containing 3.52% of fat while herds B and C were fed 4.26 and 5.06% dietary fat; NSC levels were 41.1, 40.8 and 32.9% while NDF levels were 33.7, 33.0 and 35.8% for herd A, B and C respectively. Representative samples of total mixed rations were collected monthly and diet composition and digestibility variations were monitored. Individual milk fat and protein content data of the cows were obtained from the Associazione Provinciale Allevatori monthly reports and MFPR calculated considering as inverted cows with milk fat lower of more than 0.3% than protein. MFPR incidence showed high variability between herds. On average, the minimum incidence of MFPR was registered during winter (15.6%) while this phenomenon showed the maximum incidence in summer/early autumn (29.4%). In general, a significative ($P<0.01$), negative (-0.492) correlation was found between NDF level and MFPR incidence. Compared to the yearly trend of the herds A and B, herd C did not show an increase of the incidence of fat:protein reversion during summer. This is probably related to the higher NDF and higher dietary fat administered to the herd C during this period with respect to herd A and B, whose rations were also higher for NSC content.

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Whole flaxseed improves milk production and fatty acid profile of lactating ewes during heat stress

Mariangela Caroprese¹, Marzia Albenzio¹, Annarita Bruno², Antonella Santillo¹, Rosaria Marino¹, Agostino Sevi¹

¹Dipartimento delle Produzioni dell'Ingegneria, della Meccanica e dell'Economia applicate ai Sistemi Agro-Zootecnici, Università di Foggia, Italy

²CRA, Unità di Ricerca per la Zootecnia Estensiva, Segezia, Italy
Corresponding author: m.caroprese@unifg.it