Effect of Pasture Composition on Nutraceutical Components of Pecorino Toscano Cheese.

Mauro Antongiovanni[a], Stefano Rapaccini[a], Arianna Buccioni[a], Francesco Sofi[b], Rosanna Abbate[b], Sara Minieri[a], Marcello Mele[c], Pierlorenzo Secchiari[c],

[a] Dipartimento di Scienze Zootecniche, University of Florence, Italy;

[b] Dipartimento di Area Critica Medico Chirurgica, University of Florence, Italy;

[c] Dipartimento di Agronomia e Gestione dell' Agroecosistema. University of Pisa, Italy

Sheep feeding in the Mediterranean area is based on grazing as the main forage source. The literature clearly indicates that fresh forages enhance the nutraceutical components of milk. In particular, ruminants fed pasture produce a milk rich in conjugated linoleic acid (CLA) and flavonoids. Samples of bulk tank milk and of cheese (Tuscan Pecorino) produced from the same milk were collected during Spring 2006, from two milk processing plants located in two farms of North Tuscany. At the same time the pastures were characterized for the botanical composition: farm A, gramineae 84%, legumes 12%; farm B, gramineae 50%, legumes 10%. Samples of milk and cheese were analyzed for fatty acids and flavonoids (Daidzein, Geninstein and Cathechin). The pasture with a larger botanical variability (farm B) increased milk polyunsaturated acids (4.79 vs 4.01 g/100g lipids, $P \leq 0.01$) and decreased CLA (1.12 vs 1.45 g/100g lipids, $P \leq 0.01$). The cheese processing method depressed the transferring of fatty acids from milk to cheese. The most sensitive fatty acids were C18:1 cis9, C18:2 cis9, cis12 and C18:2 cis9, trans 11. In both pastures Daidzein (farm A: 7.49 μg/100mg of sample; farm B 0.90 μg/100mg of sample; $P \leq 0.01$), Geninstein (only traces in both pasture) and Cathechin (farm A: 11.36 μg/100mg of sample; farm B 37.70 μg/100mg of sample; $P \leq 0.01$) were found. Daidzein was not transferred to milk while Cathechin was transferred in small quantities in milk and cheese. In particular, the transferring of Cathechin from pasture to cheese was: farm A 26.93%; farm B 6.60%. In conclusion, the pasture composition influenced the nutraceutical components of milk and cheese. In collaboration with a medical research team, the cheese with the higher content of CLA was used to evaluate the influence of a short-term dietary intake of CLA on several atherosclerotic biomarkers in human. The results are encouraging and are the subject of another work presented separately.