

Shearing influences the milk fatty acid profile of dairy ewes

Salvatore Pier Giacomo Rassu, Maria Grazia Manca,
Ana Helena Dias Francesconi, Alessandro Mereu, Anna Nudda

Dipartimento di Scienze Zootecniche, Università di Sassari, Italy

Corresponding author: Salvatore Pier Giacomo Rassu. Dipartimento di Scienze Zootecniche, Facoltà di Agraria, Università di Sassari. Via E. De Nicola 9, 07100 Sassari, Italy – Tel. +39 079 229304 – Fax: +39 079 229302 – Email: pgrassu@uniss.it

ABSTRACT

In Mediterranean areas shearing is commonly performed during late spring and, therefore, ewes may be exposed to cold stress especially during the night. Short-term periods of cold exposure can increase hepatic glucose production, decrease insulin secretion and increase fat catabolism and plasma non-esterified free fatty acids (NEFA) concentration. These metabolic adaptations to cold exposure can increase the mammary uptake of long-chain fatty acid from plasma. The present study aimed to investigate the metabolic response of dairy ewes to shearing by monitoring their milk fatty acid (FA) profile. Twelve 2-4-year-old Sarda ewes, in mid-late lactation, were used. The trial lasted from 30th May to 9th June 2006. The pre-experimental period (pre-shearing, PrS) was from 30th May to 5th June (shearing day), being followed by the experimental period (post-shearing, PoS) until 9th June. On shearing day, the flock was divided in two groups (6 ewes each) which were then managed differently: non-confined group (NCG) and confined group (CG) which was kept in a sheepfold during the night. Four samplings during PrS and other four during PoS periods were performed. During the trial, ewes were fed concentrate at 1000g/d per head, during the two daily milking, and hay *ad libitum*, and grazed on green clover (3h/day). Daily milk production was recorded and daily milk samples were collected for analysis of fat content and FA profile. Shearing did not influence milk yield but increased significantly milk fat content (6.37 vs. 6.94% for PrS and PoS, respectively; $P < 0.01$). Ewes confinement during the night did not affect milk yield and its fat content. Shearing modified significantly the FA profile of milk. The concentration of C8, C10, C12 and C16 increased significantly from PrS to PoS. On the other hand, the content of long-chain FA (>C18:0) did not change between PrS and PoS (46.26 vs. 46.40mg/100g of FAME, respectively). These results suggest that the increase of milk fat after shearing was related to the increase of the main FA synthesized by the mammary gland. However, the unexpected increase in the synthesis of short- and medium-chain FA after shearing suggests that these animals were not subjected to cold stress. Therefore, the mechanism involved in the modification of the FA profile caused by shearing in dairy ewes should be elucidated.