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(Article begins on next page)



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Browsing frequency and milk fatty acids of goats foraging on open grassland and dense shrubland

¹Renna M., ¹Iussig G., ¹Gorlier A., ¹Lonati M., ¹Lussiana C., ¹Battaglini L.M., ¹Lombardi G.

¹University of Turin - Department of Agricultural, Forest and Food Sciences
Via Leonardo da Vinci 44, 10095 - Grugliasco (TO), Italy

In the southwestern Alps, the presence of a large number of small semi-natural grasslands interspersed within forests has supported small dairy goat farms over years thanks to the preference of these browsing animals for herbaceous species, shrubs and tree leaves.

A study was carried out to evaluate browsing frequency (BR) and fatty acid (FA) profile of milk obtained from Camosciata delle Alpi goats foraging on paddocks laid out on a mountain open grassland (OG) and a dense shrubland (DS). The paddocks were exploited at the same stocking density by the same flock, at one-month interval from each other during the summer season. Forty-five plots were randomly selected inside each paddock and used to assess their botanical composition and goat BR of the most abundant plant species. Individual milk from seven goats was sampled in two consecutive days in each paddock and analysed for the FA profile. A general linear model for repeated measure design was used to compare the FA profile of milk between OG and DS paddocks.

The goats selected mostly forbs and woody species leaves in DS [*Veratrum album* L., 96% of BR; *Senecio fuchsii* Gmelin, 88%; *Sorbus aucuparia* L., 85%; *Sorbus aria* (L.) Crantz, 85%; *Salix caprea* L., 80%] and eutrophic species in OG [(*V. album*, 100% of BR; *Lolium perenne* L., 80%; *Poa annua* L., 69%; *Dactylis glomerata* L., 67%)]. Fatty acid analysis showed that DS milk had significantly higher percentages of conjugated linoleic acid (0.65 vs 0.52 g 100g⁻¹ fatty acid methyl esters; P<0.05), *trans* FA (6.40 vs 5.42; P<0.05) and omega 3 FA (1.07 vs 0.82; P<0.05), and a lower omega 6/omega 3 FA ratio (3.01 vs 4.59; P<0.001), than OG milk.

The results show that the exploitation of different forages by goats may result in an increase of dairy products diversity, consequently improving the productive ecosystem function.

Keywords: dairy goats, browsing frequency, milk fatty acids, grassland, shrubland