

Volatile compounds of cheese and milk from ewes differently fed (preliminary results)

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ABSTRACT

The development of strategies for flavour control and manipulation in ripened hard cheeses became recently important to satisfy the consumer's demands for high quality. Because of terpenes and hydrocarbons are transferred from forages into milk and cheese, these molecules may be used as markers to identify the geographical origin of Protected Designation of Origin cheeses.

In this research the influence of green herbage on volatile compounds was investigated on milk and cheese obtained from ewes fed the same concentrate but different kinds of pasture. The volatile composition was significantly affected by the botanical composition of pasture and these preliminary results showed that it is possible to identify the geographical origin of milk and cheese by means of markers present in the green herbage. Pasture samples, 3 bulk milk and 3 Pecorino cheese samples were collected for analysis in two different farms characterized by low land (LF) or mountain (MF). Each sample was analyzed for flavour according to SPME technique. The volatile composition of milk and cheese was affected by the type of fresh herbage. The pasture of LF (84% Gramineae, 12% Leguminosae, 2% Polygonaceae, 2% Asteraceae) was characterized by the presence of α and β - Pinene, Limonene, (E) and (Z) Ocimene, Careneol and Verbenone. In milk only Verbenone was detected while cheese was characterized by short chain fatty acids as acetic, alcohols and ketones as butan-2-ol, heptan-2-ol or 4, methyl hexan-2-one. Milk and cheese from ewes fed MF herbage (50% Graminaceae, 10% Leguminosae, 5% Caryophyllaceae, 5% Geraniaceae, 5% Ranunculaceae, 5% Rosaceae, 5% Rubiaceae, others 15%) had a completely different composition. The volatile compounds identified in pasture (heptan-2-one, 4, methyl pentan-2-one, heptan-2-ol, 2, methyl pentanal, 4, methyl heptan-2-ol, 2,7 dimethyl octan-1-ol) were not directly transferred into milk in which a possible marker produced during the rumen degradation of Phenylalanine or Tyrosine, was found. The structure of the volatile components in milk and cheese resulted not clear. Preliminary results of mass spectrum showed a possible link between the two unknown molecules.