The dairy industry is a very important sector for Piedmont (Italy) economy with the Protected Denomination of Origin (PDO) cheeses and fifty-five cheeses classified as "Traditional". Among these "Traditional" products, the ewe and goat cheeses are very important since they are strictly connected with the Piedmont area and characterized by a high nutritional value as well as an interesting sensory characteristics.

Robiola di Roccavione PDO and Murazzano PDO cheeses are the most important but a large number of other cheeses that can be classified in five groups (Verbano-Cusio-Ossola goat cheeses, Cevrin di Coazze, acid goat cheese, rennet goat cheese, Vallesina goat cheese) are produced. The latter might be qualified for the PDO designation but chemical information is lacking and only their gross composition is known.

**AIM**

The aim of this study was to characterise all the ewe and goat cheeses produced in Piedmont defining their technology, sensory characteristics and chemical composition focusing on sugars, organic acids, ketones, fatty acids and the protein degradation products obtained by the urea-PAGE.

**MATERIALS AND METHODS**

**SAMPLES** - Sixty-two samples from 44 cheesemakers were collected and analysed.

**CHEMICAL ANALYSIS** - Dry matter, fat and protein content were determined according to the Italian Official Methods for cheese analysis (D.M., 1986).

**FACTORIOUS** - The fatty acid methyl esters were prepared by trans-esterification with potassium hydroxide according to ISO 5509:2000IEC and separated on a capillary DB-WAX column (30 m length, 0.25 mm internal diameter, 0.25 m phase thickness) by using gas chromatograph Varian split/splitless injector and flame ionization detector (Zeppa et al., 2003).

**ASSESSMENT OF PROTEOLYSIS** - The pH 4.6-insoluble and soluble extracts were prepared according to the method of Kuchroo and Fox (1982), which was slightly modified, as outlined by Hayagaolu, Guven, Fox, Hannan and McSweeney (2004). Insoluble protein fraction was electrophoresed on an Urea-polyacrylamide gel electrophoresis (Urea-PAGE) by using Protein II x vertical slab-gel unit according to the method of Shalabi and Fox (1987). The gels were stained directly with Coomassie Brilliant Blu G250-2 by the procedure of Blakely and Bozzi (1977) and destained using distilled water. After destaining, gel slabs were digitized by a scanner. Scans of the electrophoretograms were used to quantify bands, using densitometric software. Similar bands were recognised visually, as described by McSweeney, Pochet, Fox and Hauly (2004) and peak volumes of corresponding bands were quantitatively determined.

**MINOR COMPONENTS** - Organic acids (citric, ortho, pyruvic, lactic, oxalic, fumaric, formic, acetic, propionic, butyric, isobutyric, valeric and isovaleric), sugars (lactose, glucose and galactose), diacetyl and aceton were determined by high performance liquid chromatography according to Zeppa et al. (2001).

**STATISTICAL ANALYSIS** - Conventional statistical methods were used to evaluate the chemical data. Analysis of variance and Duncan’s multiple mean comparison test were applied using STATISTICA for Windows Release 7.1 to determine statistical differences between the cheese varieties.

**RESULTS**

Results obtained from the analyses of cheeses showed a high chemical and sensory variability due to the differences on the cheesemaking except for Robiola di Roccavione PDO and Murazzano PDO cheeses for which specific production rules are defined. Pure goat or ewe milk is generally used as well as cow milk. Pasteurization of milk and starter addition are largely used during cheesemaking but some products are obtained also with raw milk. Coagulation is always obtained with milk acidification except for prescared goat cheese where the rennet is used. Pressing and stowing are used for some products sometimes combined with a semi-cooking of curd before moulding. Ripening, variable time from some days to several months, is very different among cheeses and correlated to the size and type of cheese.

Therefore the classification used comes from only the production area or the coagulation technique employed. In conclusion only with some specific technological rules it will be possible to create cheeses having standardised chemical, sensory and commercial characteristics.

**BIBLIOGRAPHY**