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Characterisation of a typical Piedmontese ricotta cheese

G. Zeppa[1], G. Tallone[2], V. Gerbi[1], L. Rolle[1]

[1]University of Turin, Agricultural Faculty, Department of Exploitation and Protection of the Agricultural and Forestry Resources, Food Technology Sector, 10095, Grugliasco (TO), Italy
[2]Istituto Lattiero Caseario e delle Tecnologie agroalimentari - P.zza C.A. Grosso, 82 - Moretta (CN) - Italia

e-mail of corresponding author: giuseppe.zeppa@unito.it

Summary

In Piedmont, like in other Italian areas, besides ricotta cheese for fresh consumption, several varieties of ripening ricotta are also produced. One of these, known as 'Saras del Fen' is produced exclusively in the alpine valleys of Pinerolo (TO) using whey from a mixture of cow, sheep and goat's milk, ripened from 20 days to 4 months and wrapped during ripening, in accordance with tradition, in dried alpine grass from the local mountains. This paper presents the results of a study to define the technology employed in the production of 'Saras del Fen' and its composition.

Keywords: ricotta cheese, Piedmont, cheesemaking, Brand Denomination

Introduction

Ricotta cheese is a very particular type of dairy product obtained from the heating and acidification of whey. Soluble milk proteins, not involved in cheesemaking, are present in the whey and denatured through the heating and acidification process to form flakes. These flakes are collected and drained and form the ricotta or '*recoctus*', as defined by the Romans due to its double cooking (Tantillo e Aprile, 2000).

In the past, ricotta was considered a minor product of cheese, but in recent years it has become a very important product thanks both to its sensory characteristics and to its high digestibility, low quantity of fat and the high amount of essential amino acids (Amerio e Verme, 1992; Ziino et al., 1993; Cosseddu et al., 1997; Cosseddu et al., 1999; Lodi et al., 1999; Marchisio et al., 1999).

Generally ricotta is sold fresh with or without salt and spices, although several kinds of ricotta are ripened like other types of cheese. Although the latter types are characteristic of Central-Southern Italy, ripened ricotta is also produced in the North of Italy. In Piedmont these varieties of ricotta are mainly produced in mountain farms. This is due to the impossibility of transferring them to market on a daily basis.

The most well-known of these types of ricotta is the 'Saras del Fen' or 'Ricotta with hay' from the dialectal term 'Saras' used for the whey and then for the ricotta. 'Saras del Fen' is only produced in Val Pellice, a mountain area in the Province of Turin and is characterised by the fact that it is wrapped in a special hay produced in mountain pastures during ripening. This product is ripened for 30-40 days although is possible to find ricotta that has been ripened for several months.

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The aim of this work was to define the technological and chemical characteristics of this ricotta, to support the application for Brand Denomination.

Materials and method

The technological study was conducted with all the producers of 'Saras del Fen' (18 farms) by means of a special questionnaire.

The chemical study was conducted on 18 varieties of 'Saras del Fen' with 30-day ripening. Dry matter, fats, proteins, ashes, soluble proteins, acidity, carbohydrates, sodium chloride were determined according to Italian Standard Methods of Analysis of Cheeses (Ministerial Decree of 21 April 1986).

Fatty acids, organic acids, sugars, diacetyl and acetoin were determined with HPLC using an Aminex HPX-87H column (Zeppa et al., 2001).

Results

Saras del Fen is produced with cow whey (90-100%) and ewe or goat whey (0-10%). For cheesemaking the whey is heated at 60 °C, 5-10% raw milk is added then heated to 80-85 °C. Once this temperature is reached the whey is coagulated with citric acid or magnesium sulphate. When the curd has formed, the whey-curd mixture is then heated to 90-95 °C, then the curd is finally removed, salted and placed in linen cloths. These bags are hung for 24-48 h forming the characteristic half-sphere shape of the product. At the end of this time, the ricotta cheese is removed from the linen cloths, if necessary salted dry and ripened for at least 20 days at 8-12 °C in curing rooms. It is during this ripening time that the ricotta cheese is wrapped in a special hay produced in mountain pastures. The real reasons for the latter are unknown. The three most likely reasons are as follows: to protect the product during its transfer from the mountain farm to the market; to flavour the product; to facilitate draining.

Generally, the dry matter content (Table 1) is very high, considering that the dry matter content for DOP Toma Piemontese is about 54%, for the DOP Pecorino is about 65% and DOP Provolone is about 74% (Cantarelli, 1979).

The fat content is also very high due to the use of high quantities of ewe and goat milk or the addition of cream to the whey. Also the ash content is very high, mainly formed by sodium chloride used for flavouring and preservation. The use of a non-defined quantity of salt causes a high variability in concentration, shown by the high standard deviation value.

Soluble protein and carbohydrate content are very low but very variable and this is due to the different ripening methods employed, although the ripening time is the same. There are several reasons for this (the microbiological quality of milk and then of whey, the temperature and the time of the heating of the whey, the salt quantity, ripening conditions). These parameters also need to be standardised for the consumer.

Acidity is also generally low because there are no lactic bacteria.

The energy value is also significant, as it is very high if compared to that of a fresh ricotta with less than 200 Kcal per 100 g.

Table 1. Gross composition of 18 Sarass del Fen produced in alpine farms with 30 days of ripening (X: mean; σ: standard deviation; dm: dry matter).

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	X	σ
Dry matter (%)	52.22	7.44
Fat (% dm)	63.6	7.4
Protein (% dm)	28.1	5.26
Ash (% dm)	5.5	1.8
Soluble protein (% dm)	3.8	2.2
Acidity (meq)	4.1	3.2
Carbohydrate (% dm)	2.8	2.3
Sodium chloride (%)	1.02	0.3
Calories per 100 g	359	86

In terms of minor components, the presence of citric acid and sugars and the absence of diacetyl and acetoin is very interesting (Table 2). This is due to the short ripening time and over all to the absence of fermentation by lactic bacteria.

Table 2. Concentration (g/Kg of product) of fatty acids, organic acids, sugars, diacetyl and acetoin in the 18 samples of 'Saras del Fen' examined (X: mean; σ: standard deviation; nd: not detected)

	X	σ
Oxalic acid	0.03	0.03
Citric acid	0.04	0.04
Orotic acid	0.01	0.00
Piruvic acid	0.76	0.83
Lactic acid	3.77	4.14
Formic acid	0.25	0.14
Acetic acid	0.31	0.22
Diacetyl	nd	-
Propionic acid	0.23	0.07
Isobutyric acid	0.66	0.38
Butyric acid	0.77	1.07
Isovaleric acid	0.40	0.32
Valeric acid	0.52	0.22
Hippuric acid	0.01	0.01
Uric acid	1.57	0.62
Acetoin	nd	-
Lactore	3.41	3.02
Glucose	0.09	0.14
Galactose	0.95	0.46

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The concentration of fatty acids is also very low, which demonstrates the absence or the small extent of bacterial action in this products.

Discussion

Saras del Fen is a homemade product, therefore the production technology has many personal interpretations often due to the need to adjust the productive process to specific conditions of the farm in question. Products also vary considerably due to their dry matter, fat and protein content. Production regulations are needed to limit excessive variability. The latter regulations are essential to protect both the consumer and the producer.

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