

STUDY ON THE QUALITY OF TELEMEDIA CHEESE OBTAINED WITHIN THE UNIT “FABRICA DE PRODUSE LACTATE CRISLACT”

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Abstract

Telemea cow's cheese is a native variety, made from cow's milk, preserved in brine, and of the wide variety of cheeses that are made in our country, this is the most widespread due to consumer demand. The present study was carried out in order to determine the quality of the Telemea cheese product obtained in the “Fabrica de produse lactate Crislact” processing unit in Iași County. In parallel, the monitoring of the quality parameters of raw material milk intended for processing was also carried out. The raw material milk had variable properties from one manufacturing series to another. Thus, the most fluctuating parameter was represented by the fat content, where the average value determined was 3.62 ± 0.84 , but under the conditions of determining a coefficient of variation of 21.42. The quality of the Telemea cheese assortment was extremely constant for each batch produced during the research, a statement supported by the homogeneity of the characters studied. The general conclusion of this paper is that the unit, although forced to process mainly collected milk, has the ability to offer high quality products, with extremely homogeneous properties from one production series to another.

Key words: quality, raw material milk, Telemea cheese

INTRODUCTION

Milk represents, on the one hand, one of the basic foods for all age groups and at the same time the raw material for an extremely diverse range of food products [1, 2].

Considered a “food universe”, milk is transposed into a complete and complex food, irreplaceable, due to its multiple beneficial effects, such as the mineralizing action in young people; or the anti-calcifying one in adults [3].

Milk consumption per inhabitant is, worldwide, an essential indicator of the standard of living. For this reason, in developed countries, milk production represents 30-40% of the gross income achieved in agricultural production [4].

Cheeses are ripened or fresh products, which are obtained by removing the whey from the curd formed after the coagulation of whole, skimmed or partially skimmed milk, cream, buttermilk, or a mixture of these products [5, 6].

More than 2000 varieties of cheese are produced worldwide (around 1000 types in France alone), but only 500 of them are recognized by the International Milk Federation [7].

Telemea cheese (Brăila cheese) is a domestic product, obtained from cow, sheep, goat or buffalo milk. The versatility and tradition of the product make it one of the top preferences of consumers in our country [8, 9]. For this reason, through this work, we proposed to study the quality of Telemea cheese obtained in a milk processing unit in Iași County.

MATERIAL AND METHOD

The products subject to the study were represented by the raw material milk collected by the processing unit, respectively the Telemea cheese obtained within it.

In order to establish the quality of the mentioned products, physical-chemical and

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sensory analyses specific to each category were carried out. Consequently, the raw material milk samples were analysed weekly, during two calendar months. The analysed milk represented the raw material that was the basis for the manufacture of Telemea cheese. The actual determinations were carried out using classic methods, their accuracy being checked using the Ekomilk Ultra Pro milk analyser:

- the determination of the density was carried out by the aerometric method, using the thermo-lactodensimeter and expressed in g/cm^3 [10];
- acidity was determined by the Thörner method. The principle is based on the neutralization of acids from a known volume of milk, with NaOH solution, in the presence of a colour indicator, the result being expressed in °T [10];
- determination of the dry substance (oven drying method) - drying a sample in the oven brought to the temperature of +102°C, until the constant weight of the residue. Through the calculation formula, the percentage of total skimmed substance was determined ($SDM (\%) = TDM - F$) [11];
- the fat content was determined by the butyrometric method, according to which the fatty substance is separated by centrifugation, after prior dissolution with sulfuric acid, in the presence of isoamyl alcohol [12];

- salt determination (silver nitrate method) - Ag nitrate in contact with Cl ions gives AgCl; when all the chlorine is precipitated as AgCl, the excess silver nitrate reacts with potassium chromate, giving brick-coloured silver chromate [12].

The data obtained from the analyses and calculations performed were compared with the values specified by the company standards.

RESULTS AND DISCUSSIONS

The raw milk presented a white colour with a slight yellowish tint, while the smell was pleasant, characteristic of raw milk, and the taste was sweet (Table 1).

In the alcohol tests, the milk was stable, and the results of the analyses for antibiotics were negative in all cases.

The milk samples were subjected to physical-chemical assessments, following the values for acidity, density and temperature, as well as the fat and dry matter content of the milk.

Regarding the fat content of milk, an average level of 3.62 ± 0.84 was determined, i.e. 0.32% higher than the company standard. However, the calculation of a coefficient of variation of 21.42 was observed, a value that allows us to characterize the character as less homogeneous (Table 2).

Table 1 Sensorial characteristics of milk-raw material

Test	Internal quality standard	Obtained results
Colour	White-yellow	White, with a yellowish tint
Smell	Pleasant, characteristic of raw milk	Pleasant, characteristic
Taste	Sweetie, no foreign tastes	Sweetie; no foreign tastes were identified
Degree of impurity	Quality I	Quality I
Alcohol test	Stable	Stable
The test for antibiotics	Negative	Negative
California Mastitis Test	Negative	Negative

Table 2 Physical-chemical characteristics of milk-raw material

Specification	Standard	Obtained values		Differences from the standard
		X±sX	V%	
Fat (%)	min. 3.3	3.62±0.84	21.42	+0.32%
Acidity (°T)	15÷19	17.8±1.22	9.28	+0.8°T
Density (g/cm ³)	1.029	1.030±0.004	7.64	+0.001
Non-fat dry matter (%)	min. 8.4	8.78±1.12	3.16	+0.38%
Temperature (°C)	max. 12°	10.6±0.8	1.08	-1.4°C

The acidity value fell within the limits provided by the standard (15–19°T), being higher by 0.8°T compared to the average acceptability. On average, the parameter was located at a value of The average value determined for this physical quality parameter was 17.8±1.22°T, under the conditions of a fairly good homogeneity of the character, the coefficient of variation being 9.28% (Table 2).

The determination of the density of the analysed milk indicated an average value of 1.030±0.004, under the conditions of determining a coefficient of variation that denoted the homogeneity of the character (V%=7.64) (Table 2).

The percentage in dry non-fatty matter was slightly higher in the analysed samples, namely 8.78±1.12%, compared to the minimum standard value of 8.4%, the character being homogeneous (Table 2).

The analysed finished product, respectively Telemea cow's cheese presented organoleptic characteristics corresponding to the product standard. It presented a white to yellowish-white colour, with compact mass and uniform consistency. In the section, we observed a clean paste, uniform in cross-section (Table 3).

Regarding the dry substance percentage obtained, we mention that it was close to the one provided in the standard (min. 42%), being 43.88±1.12%, thus 1.88 higher than the required minimum. The character was very homogeneous (V%=3.26) (Table 4).

Another important parameter for this variety was the percentage in NaCl, which was at an average level of 2.74±0.14%, 0.51 less than the average of the accepted values. And in this case the character was very homogeneous (V%=2.86) (Table 4).

Table 3 Sensorial characteristics of the assortment Telemea cow's cheese

Test	Finite product	Product standard
External appearance	Whole pieces, with a clean surface; slight seat marks	Whole pieces, with a clean surface. Pieces with mouldy, softened, mucilaginous, reddened or impure surfaces are not accepted
Colour	White to yellowish white, uniform throughout the mass	White or white with a slight yellowish tint, uniform throughout the table
Aspect in section	Clean, uniform paste; occasionally pressing voids and fermentation meshes	Clean, uniform pulp, may present rare pressing voids. Inhomogeneous, sponge-like paste with impurities, reddish, yellow or mouldy paste is not allowed
Consistency	Compact mass, with uniform consistency	Compact, evenly bound mass that breaks easily without crumbling. Chalky or rubbery consistency is not allowed
Smell	Pleasant, sour, medium salty	Pleasant, characteristic, sour and moderately salty
Shape and size	Parallelepiped pieces, with a square base of 11x11 cm	Parallelepiped pieces with a square base, base side of 9-13 cm and height of 9 cm

Table 4 Physical-chemical characteristics of the Telemea cow's cheese variety

Specification	Standard values	Obtained values		Differences from the standard
		$\bar{X} \pm s_x$	V%	
DM (%)	min. 42%	43.88±1.12	3.26	+1.88%
Salt (%)	2.5–4.0	2.74±0.14	2.86	-0.51%
Fat/DM (%)	42	42.36±0.52	1.68	+0.36%
Prot. subst. (% min.)	16	17.03±0.57	4.26	+1.03%

Calculating the fat relative to the dry matter, the average value was only 42.36±0.52%, therefore superior to the provisions of the company standard (42%) by 0.36. Character variability was small, only 1.68% (Table 4).

Analysing the percentage of protein substances in Telemea cow's cheese, we noticed that this character was homogeneous (V%=4.26), obtaining an average value of 17.03±0.57, slightly higher than the minimum established by the standard (16%) (Table 4).

CONCLUSIONS

The raw material milk used in the processing unit fell within the company's acceptability standards. Even under these conditions, we observed a fairly obvious fluctuation in fat percentage, highlighted by a higher coefficient of variation of the parameter (V%=21.42). Obviously, these differences derive from the fact that the unit uses collected milk.

The finished product analysed, respectively Telemea cheese, was characterized by organoleptic and physical-chemical properties that fell within the company standards. The most important thing, from our point of view, is the fact that the unit maintains a high quality standard and at the same time strictly respects the manufacturing technology, a fact demonstrated by the constancy of the quality organoleptic and physical-chemical properties of the assortment from a manufacturing batch to another.

The general conclusion of the present study is that the unit, although it has to process mainly collected milk, has the ability to offer high quality products with extremely homogeneous properties.

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