MILK IMPORTANCE AS RAW MATERIAL IN PROCESSING OF DAIRY PRODUCTS

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Abstract

It is well known the fact that to obtain dairy products with a good quality we need raw material milk with a superior quality.

Starting from this in the current paper we focused on analysis of quality of raw material milk which will be processed for obtaining Şipote pressed cheese at company SC TRANS GIGEL SRL Şipote.

So, were gathered 10 milk samples and 10 product samples which were subjected to physical-chemical and microbiological (in case of milk) analysis, obtained data being compared with the ones presented in quality standards.

Milk which will be processed recorded a mean value for fat content higher with 0.72% than the minimum imposed by standards. Regarding microbiological features, results obtained by us indicated much lower values in comparison with the maximum admissible by standards.

Regarding the product analysed by us, like in the case of milk the obtained values were inside the standards. For water content the mean value calculated by us was lower with 1.4% than the admissible maximum. About fat content, this one recorded a mean value higher with 1.02% than the indicated minimum by standards.

In conclusion could be said that both milk which is processed and also the product analysed by us are inside quality standards.

Key words: milk, quality, pressed cheese

INTRODUCTION

Cheeses have an important role in human nutrition, being an important source for nutritive elements, which are concentrated in a small volume and with a highly digestibility. Chesses' nutritive value is conferred by a high content in protein substances and easy assimilated fats, mineral salts of calcium, phosphorous, magnesium, sodium. Cheeses are an important source of liposoluble vitamins A, D, E, K, due to fat concentration in curd obtaining by precipitation of caseins, those ones being higher than in raw material milk [1], [3].

In according with F.A.O. cheese is a fresh or processed product obtained after milk coagulation and separation of whey. It contains proteins, fats, water and mineral salts in variable quantities, in rates which depend on the cheese assortment type.

Function of raw milk nature as well as processing technology, could be realised a varied assortment of cheeses with specific sensorial, physical-chemical and microbiological features. Protein in milk, casein, has an important role in its processing, because offer the possibility of obtaining cheese with different features from aroma, consistency and lifetime point of view.

In according with the literature, nowadays are known 1000 assortments of cheeses, which are especially processed from cow, sheep, goat and buffalo milk or a mixture of them.

In category of cheeses with scalded paste are included pressed cheeses. Those ones are obtained from milk or sheep curd which reached a certain maturation degree (pH = 4.7 – 5).

Modern technologies for processing of cheeses with scalded paste use pasteurized milk and sown with cultures of lactic bacteria, which during maturation (acts on lactose, protein substances and fats) which offers taste,

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smell, consistency and characteristic design for each cheese assortment [4].

In the current paper we aimed analyse a part of physical-chemical indicators for raw milk which will be processed for obtaining Şipote pressed cheese at company S.C. TRANS GIGEL SRL – Şipote.

MATERIAL AND METHOD

To achieve the proposed goal were effectuated determinations both on raw milk as well as on the final product, namely Şipote pressed cheese. The obtained data, at the end of qualitative determinations were compared with the existed data in quality standards. For raw milk were gathered 10 samples on which were made effectuated physical-chemical and microbiological analysis. Qualitative determinations were: acidity (°T), density (g/cm^3), determination of fat content (%) and determination of protein titre (%).

Density determination was effectuated using a thermo-lacto-densimeter. Acidity determination was realised in according with STAS 6353-85, and for determination of fat content was utilised Gerber method.

Regarding microbiological determinations realised on milk were identified a total germ number (TGN/ml) these ones were realised using ColoniiStart FUNKE GERBER device, and number of somatic cells (NSC/ml) was identified with Somatos M device.

Regarding determinations realized on Şipote pressed cheese, we focused mainly on water content (%), DM (%), fat (%), protein content (%), acidity (°T) and salt content (%).

Water and dry matter determinations were realised in according with STAS 6344-88, fat content was made in according with STAS 6352/2-87. For identification of protein substances To identify protein substances was utilised method STAS 6355-89 and for acidity was utilised the method described in STAS 6353-85. The last determination, salt content, for pressed cheese, was effectuated in according with a STAS 6354-84.

Collected data were subjected to statistical computation, using the ANOVA one-way algorithm included in MsExcel, to calculate the descriptive statistics (mean, standard error) and find out whether there were significant differences and upgraded with PostHoc Daniel's XL Toolbox version 4.01 (http://xltoolbox.sf.net), to identify the differences.

RESULTS AND DISCUSSIONS

Even if milk which enters in processing of cheeses with scalded paste at S.C. TRANS GIGEL SRL is collecting milk, the obtained results at the end of determinations were favourable, being inside the existent data from quality standard. So for acidity was calculated a mean value of 17.6±0.322°T minimum being 16°T and the maximal reached value was 19°T.Regarding the studied character, this one presented a very good homogeneity, value of variation coefficient being of 5.97% (tab. 1). For fat content was recorded a mean value of 3.92% minimum being 3.5% and maximal reached value was 4.2%.

Regarding protein content of raw milk the mean value was situated at a level of 3.56±0.051% minimum being 3.2% and maximal value being 3.8%. Value of variation coefficient was of 4,358% fact which shows a very good homogeneity also inside this batch (tab. 1).

Table 1 Physical-chemical parameters for raw milk

SPECIFICATION	*Company standard SR 2418:2008*	*Statistical estimators*				
		n	$\bar{X} \pm s_{\bar{x}}$	*V%*	*Minimum*	*Maximum*
Acidity (°T)	15…19	10	17.6±0.322	5.97	16	19
Density (g/cm^3)	1.029	10	1.0294±0.0002	0.064	1.028	1.030
Fat content (%)	min. 3.2	10	3.92±0.074	5.761	3.5	4.2
Protein titre (%)	min. 3.2	10	3.56±0.051	4.358	3.2	3.8

At the end of microbiological determinations the obtained date indicates milk with a good quality. So, for the total germ number was 91000±2736.44 TGN/ml minimum being 80000 TGN/ml and maximum value being of 100000 TGN/ml.

Regarding the number of somatic cells the obtained minimum was 15000 NSC/ml maximal value being of 29000 NSC/ml fact which leaded to a mean of 20780±1282.21 NSC/ml (tab. 2).

Table 2 Microbiological parameters for raw milk

SPECIFICATION	Company standard	Statistical estimators				
		n	$\bar{X} \pm s_{\bar{x}}$	V%	Minimum	Maximum
TGN/ml	max. 100000	10	91000±2736.44	9.55	80000	100000
Somatic cells/ml	max. 400000	10	20780±1282.21	19.49	15000	29000

Naturally, a milk with a superior quality leads to obtain of a product with a good quality. So, for Şipote pressed cheese analysed physical-chemical indicators offered values which are inside the quality standards for obtaining of cheeses with scalded paste.

For fat content mean value calculated by us was of 46.02±0.019% and protein content was at a level of 23.989±0.049%.

Regarding salt content, calculated mean value was 2.130±0.032% maximal value, in according with quality standard, being 3.0% (tab. 3).

Table 3 Physical-chemical properties for Şipote pressed cheese

SPECIFICATION	Company standard	Statistical estimators				
		n	$\bar{X} \pm s_{\bar{x}}$	V%	Minim	Maxim
Water (%)	Max. 44	10	42.6±0.516	3.829	39	44
DM (%)	Min. 56	10	57.37±0.522	2.849	55	59
Fat (%)	Min. 45	10	46.02±0.019	0.150	45.87	46.25
Proteins (%)	Min. 22	10	23.989±0.049	0.718	23.51	24.18
Acidity (°T)	Max. 190	10	183.41±1.113	1.917	179	185
NaCl (%)	Max. 3.0	10	2.130±0.032	3.522	1.99	2.28

CONCLUSIONS

At the end of determinations both on raw milk and also on product Şipote pressed cheese obtained at company S.C. TRANS GIGEL SRL Şipote we could say that those ones are in according with the quality standards.

So, collecting milk which enters in processing recorded a mean value for fat content higher with 0.72% than the minimum indicated by standard.

Regarding microbiological characteristics the obtained results indicated lower values in comparison with the maximum admissible by standard, fact which shows that milk was gathered and stored in conditions in according with hygienic-sanitary demands.

Regarding the product analysed by us, Şipote pressed cheese, like in milk case the obtained values were inside standard.

For water content the mean value calculated by us was lower with 1.4% than the admissible maximum. Regarding fat content this one recorded a mean value higher with 1.02% than the minimum indicated in standard.

Another very important quality index for this cheese assortment was NaCl content, for which the mean established by us was 2.130±0.032% with 0.87% lower than the maximum indicated in standard.

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[5] STAS 6352/2-87 : Lapte şi produse lactate. Determinarea conţinutului de grăsime din brânzeturi.
[6] STAS 6353-85 : Lapte şi produse lactate. Determinarea acidităţii.
[7] STAS 6354-84: Lapte şi produse lactate. Determinarea conţinutului de clorură de sodiu.