UNIVERSITY OF LIFE SCIENCES
"KING MIHAI I" FROM Timisoara
Multidisciplinary Conference on Sustainable Development
30-31 May 2024

THE QUALITY OF SOME ACID DAIRY PRODUCTS OBTAINED IN THE TRADITIONAL SYSTEM

Alexandru USTUROI[1], Bogdan - Vlad AVARVAREI[1], Cătălin - Emilian NISTOR[1], Cristina SIMEANU[1], Mădălina Alexandra DAVIDESCU[1]*, Marius Giorgi USTUROI[1]

1"Ion Ionescu de la Brad" University of Life Sciences - 700489, Iasi, Mihail Sadoveanu Alley, no. 3, Romania

Abstract

The transformation of milk into acidic products has led to a significant increase in its nutritional and biological value. Containing all the components of milk, but in a more easily digestible form, readily metabolizable calcium, significant amounts of vitamins (from the B complex, synthesized by microorganisms in starter cultures), acid-dietetic products hold a significant and well-deserved share in human nutrition. Consequently, through this work, we aimed to identify qualitative parameters of raw milk, and of some assortments of acidic products obtained in a traditional system. In the case of raw milk, the parameters were within the limits imposed by company standards (acidity 17.1±0.60°T; density 1.027±0.002, fat 3.5±0.4%; average delivery temperature of 6±0.50°C) with fluctuations generated by the season. The Buttermilk assortment presented organoleptic and physico-chemical characteristics close to those provided in standards (characteristic taste and color, acidity 145±10°T, fat 2.1±0.1%, proteins 2.9±0.2%). In the case of the Sana assortment, the physico-chemical parameters showed slight modifications compared to the standard, with lower acidity (115±10°T), hence the weak expression of some sensory characteristics. The most important conclusion of this case study was that regardless of the classification of the unit, the physico-chemical and sensory properties of the products obtained are decisively influenced by strictly adhering to the technologies, otherwise risking more or less severe deviations from the imposed standards.

Introduction

After ranking animal products according to their economic and nutritional importance, milk was placed second, right after meat. Generally, it can be stated that milk is one of the cheapest sources of animal protein with high biological value.

Globally, the consumption of milk and dairy products per capita represents an indicator of the standard of living, and for this reason, in civilized countries, milk production accounts for over 40% of the gross income generated by agricultural production.

Considered a "nutritional universe," milk is an irreplaceable, complete food, particularly due to its multiple beneficial effects, such as mineralizing action for the young, preventing decalcification in seniors, and protecting against highly toxic elements for those working in hostile environments. Rational consumption of milk ensures good physical and intellectual development, especially in young people, increases the body's resistance to diseases, extends longevity, and ensures overall health and well-being for all consumers.

Acidic dairy products contain all the nutrients of milk but in a more easily assimilable form. Casein is found in a suspended form, while lactose is fermented and transformed into lactic acid. The therapeutic and dietary value of yogurt has been highlighted by several researchers, who attributed premature aging to auto-intoxication caused by an excessively meat-heavy diet.

Consuming acidic dairy products, obtained under hygienic conditions, ensures the maintenance of health through their nutritional and therapeutic value.

Material and method

The study was conducted using classical analysis methods. Specifically, these methods included standard procedures for data collection, processing, and evaluation, which are widely accepted in scientific research. For the statistical interpretation, *ExcelSTAT,* a comprehensive statistical software, was utilized. ExcelSTAT offers a variety of statistical tools and functions. In terms of data collection, a total of fifteen samples were gathered for each category being analysed. This sample size is adequate to provide a representative assessment of each type, ensuring that the results are statistically significant and reliable. The selection and handling of these samples followed strict protocols to maintain consistency and accuracy throughout the study.

Results and discussions

The research initially focused on understanding the properties of raw milk; consequently, it was observed that from an organoleptic perspective, it met the necessary quality conditions, being characterized by a normal color, a pleasant, slightly sweet taste, a specific smell, and a fluid consistency **(Table 1,3,5).** Physical-chemical analysis revealed an acidity of 17.10±0.60°T and a fat content of 3.50±0.40% **(Table 2).** The buttermilk (Lapte bătut) showed no deviations from company standards, and its physical-chemical characteristics were also within optimal parameters, namely: acidity of 145±10°T, fat content of 2.10±0.06%, and protein substances at a proportion of 3.4±0.20% **(Table 3).** For the "Sana" type, the values obtained were an acidity of 115±10°T, an average fat content of 3.7±0.24%, and a protein substance content of 3.1±0.20% **(Table 5).**

Tab. 1. The organoleptic properties - *raw milk*

Characteristics	Specification	Samples
Taste	Pleasant, sweet, characteristic of the species	Pleasant, sweet, characteristic
Smell	Pleasant, specific, slightly ketone and butyric	Characteristic, without foreign odors
Colour	White, yellowish	White, slightly yellowis
Consistency	Fluid	Fluid
Aspect	Opalescent liquid, without foreign bodies	Opalescent, free of foreign bodies

Tab. 2. Physical-chemical properties - *raw milk*

Properties studied	Specification	Data obtained	
		$\bar{x} \pm s_{\bar{x}}$	V%
Acidity (°T)	Max. 19	17.10±0.60	2.46
Fat (%)	Min. 3%	3.50±0.40	2.38
Density	1.03	1.027±0.002	1.22

Tab. 3. The orgaoleptic properties - *Lapte Bătut*

Characteristics	Specification	Samples
Taste	Pleasant, sour, refreshing, characteristic aroma	Pleasant, sour, refreshing, specific aroma
Smell	Specific aroma, with properties specific to lactic fermentation	Specific aroma
Colour	White with a yellowish tint	White - yellowish
Consistency	Firm curds, without gas bubbles and whey removal	Curd of the right consistency, finely dispersed
Aspect	Porcelain appearance	Porcelain appearance

Tab. 4. Physical-chemical properties - *Lapte bătut*

Properties studied	Specification	Data obtained	
		$\bar{x} \pm s_{\bar{x}}$	V%
Acidity (°T)	150	145±10	3.58
Fat (%)	2	2.10±0.06	1.24
pH	4.6	4.5±0.12	3.46
Protein (%)	2.9	3.4±0.20	4.12

Tab. 5. The orgaoleptic properties - *Sana* (3,6% fat)

Characteristics	Specification	Samples
Taste	Pleasant, sour, specific aroma	Pleasant, sour, specific aroma
Smell	Specific aroma for the Sana assortment, with properties specific to lactic fermentation	Specific aroma of Sana, with specific smell of lactic fermentation
Colour	White, milky	White, characteristic of milk
Consistency	Curd of fine consistency	Curd of the right consistency
Aspect	Compact	Compact

Tab. 5. Physical-chemical properties - *Sana* (3,6% fat)

Properties studied	Specification	Data obtained	
		$\bar{x} \pm s_{\bar{x}}$	V%
Acidity (^{0}T)	140	115±10	6.28
Fat (%)	3.6	3.7±0.24	3.42
pH	4.6	4.5±0.24	4.46
Protein (%)	2.8	3.1±0.20	3.20

Conclusions

Through the conducted study, it was demonstrated that the manufacturer maintains traditional technologies, and the products obtained adhere to the standards set by the company. However, we deem it necessary to process only milk that meets the minimum quality conditions mandated by current regulations. To address consumer demands effectively, it is beneficial to utilize information gathered from customers through conducting opinion polls in the regions where the unit sells its products.