

Sensory and physical-chemical characterization of a Romanian dairy product: Sana

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Abstract

Acidic dairy products fall into the category of dietary foods with healing properties. The dietary and nutritional value of these products is due to the fact that they contain all the nutrients from milk, in a form more easily accessible to the body.

The probiotic bacteria contained in Sana belong to the category of useful bacteria, which make digestion as easy as possible. This specific Romanian acidic dairy product (Sana) is becoming more and more popular because it supports the promotion of a healthy gastrointestinal tract.

This paper presents sensory analysis and physical-chemical characterization of some Sana samples, which were purchased from the local market. The conclusions to be drawn from the determinations are:

- the sensory examination revealed values corresponding to the legally imposed norms for the acidic dairy product: Sana;
- for acidity, the analyzed Sana samples registered values between 88°T and 108°T, being below the maximum limits allowed for this parameter of 120°T;
- the analyzed samples presented a higher protein titer than the minimum allowed limits for this parameter of 3.2%; thus the determined values ranged between 3.3% and 4.0%;
- in terms of fat content, almost all analyzed Sana samples (except one) showed values above the minimum admissibility limit of 3,6%, the maximum value (3.8%) being determined in sample 2a.

Keywords: dairy products, physical-chemical properties of dairy products.

1. Introduction

Milk and dairy products have always been a source of health. As is well known, milk was predestined as man's first food by nature, which has in a significant proportion all the substances indispensable for the development of the organism.

Due to its increased nutritional value and high degree of assimilation, milk is recommended for feeding convalescents and the elderly.

The old men had a saying: "Drink sour milk and you will have a long life." This saying confirms that, since ancient times, people knew the beneficial influence of acidic dairy products on the body.

Acidic dairy products can be obtained from sheep's, cow's, goat's, buffalo's milk, whole or skimmed, or from a mixture thereof, by using combined or single bacterial cultures and a technological treatment specific to each product. As a final result of the development of the microorganisms in the milk, there is the accumulation of lactic acid and the fermentation of lactose, under the influence of which casein coagulates, resulting in the specific coagulation of these products.

Soured milk products are made by fermenting heat-treated cow's milk, sown with selected cultures of flavoring and acidifying lactic streptococci (*Streptococcus diacetillactis*, *Streptococcus lactis*, *Leuconostoc citrovorum*, *Streptococcus cremoris*).

Several types of soured milk are obtained, of which the most consumed in Romania is "Sana", a product with 3.4% content of fat.

The acidic dairy industry faces a decisive challenge in the sense that products from this category must provide adequate answers to the demand for organic products, but at the same time to be nutritionally balanced [1, 9, 11].

Fermentation is one of the oldest methods of preserving food, which contributes to its aroma, appearance and texture [10, 13]. Therefore, fermented products are generally more attractive to the consumer than those that are not fermented [6 - 8].

Soured milk products contain lactic acid, which promotes the secretion of gastric juice, and the insignificant amount of ethyl alcohol, which is produced in some products, after the fermentation of lactose, increases appetite; all this stimulates the digestion process and increases the assimilation of other foods [3-5, 12]. Also, lactic acid causes the pH of the sour milk to drop, killing the pathogenic bacteria and inhibiting the growth of many of the common spoilage micro-organisms [4].

It has been shown that the addition of extracts from various plants can improve the physical-chemical properties, antioxidant capacity and microstructure of acidic dairy products during cold storage [2].

Table 1. Sensory properties of sour milk product: Sana

Attribute	Definition
Appearance and consistency	Homogeneous fluid (finely dispersed curd) with an increased consistency, without gas bubbles
Color	White, uniform
Smell and taste	Pleasant, fragrant, refreshing, comforting

2. Materials and Methods

Soured milk Sana is made from cow's milk, partially or wholly skimmed, to which specific lactic acid bacteria are added. Sterile milk is fermented for 18-24 hours, the fermentation temperature being 20-25°C and sowing being done in a percentage of 1.5-3%. After thermostating, when the product has an acidity of 80-90°T, the curd is crushed and distributed in small packages. After fermentation, the milk looks thicker than normal milk and is a little spicier to taste.

In order to identify the sensory characteristics and the main physical-chemical indicators of soured milk Sana, 3 assortments of Sana were tested (produced by different companies). From each

assortment, 2 samples were analyzed, at a difference of one week. The samples were refrigerated at 4°C. The sensory evaluation and the chemical and physical analyses were carried out in the laboratory.

From a sensory point of view, the following were evaluated: consistency, appearance, color, taste and smell. The examination was performed in a clean, odorless, bright room with a temperature of 16-20°C.

From the physical-chemical point of view, the aim was to determine the protein titer, acidity and fat content. The current titration method (Thörner method) was used to determine the acidity, according to STAS 6353-75. The determination of fat content was performed by the acid-butyrometric method, according to STAS 6352/1-73, and the protein content was determined by a fast method (according to STAS 6355-73), which uses formic aldehyde to block amino groups of proteins; further the free carboxylic groups were titrated with 0.143 N sodium hydroxide solution, the result being expressed directly in percentages.

3. Results and Discussion

From the sensory point of view, all the analyzed samples met the legal norms:

- appearance and consistency: increased consistency, homogeneous, dispersed curd, without gas bubbles;
- color: uniform white;
- taste and odor: specific taste of soured milk product, pleasant, aromatic, refreshing, without foreign taste or smell.

The results of the physical-chemical examination of the samples are presented in the following figures.

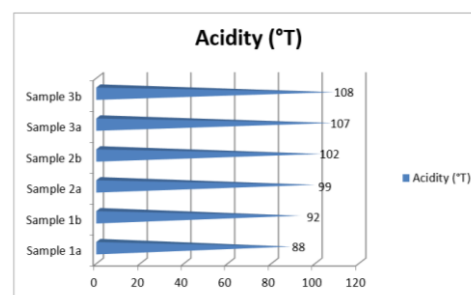


Figure 1. Acidity of the analyzed Sana samples

The acidity data are presented in figure 1. Thus, the acidity of the analyzed Sana samples was below the maximum allowed limits at this parameter of 120°T. The acidity values of the sour milk Sana samples fall within the range 88 and 108°T. The protein titer of the analyzed Sana samples was above the

minimum allowed limits for this parameter of 3.2%. Generally there was no significant difference between the samples in terms of protein titer values obtained (figure 2). The protein titer values of all the samples were between the range of 3.3 and 4.0%.

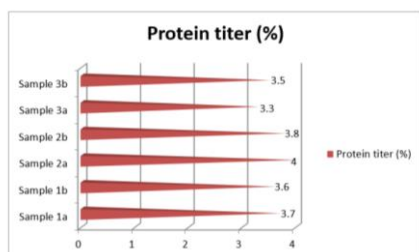


Figure 2. Protein titer of the analyzed Sana samples

The fat content in the examined Sana samples ranged from 3.5% to 3.8%. The minimum permitted value for soured milk Sana is 3.6%, all values determined being above or equal to the admissibility threshold, except for sample 3a, which recorded a content of fat of 3.5%.

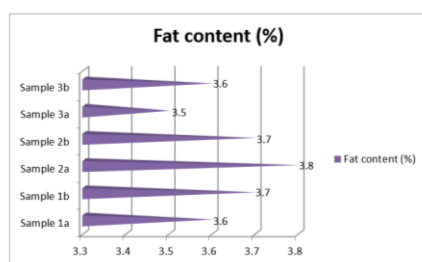


Figure 3. Fat content of the analyzed Sana samples

4. Conclusions

The experimental researches undertaken in order to highlight the main sensory and physical-chemical characteristics of some soured milk Sana samples purchased on the domestic market, allowed us to draw the following conclusions:

- following the sensory examination, no deviations from the legally imposed norms for the acidic dairy product Sana were found;
- the acidity of the analyzed Sana samples registered values between 88°T and 108°T, being below the maximum allowed limits at this parameter of 120°T;
- the protein titer of the analyzed Sana samples was above the minimum limits allowed for this parameter of 3.2%, the values being between 3.3% and 4.0%;
- with regard to the fat content of the analyzed Sana samples, all samples exceeded the minimum admissibility limit of 3.6%, except for one; the maximum value was determined in sample 2a (3.8%).

Compliance with Ethics Requirements. Authors declare that they respect the journal's ethics requirements. Authors declare that they have no conflict of interest and all procedures involving human or animal subjects (if exist) respect the specific regulation and standards.

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