

RESEARCH OF THE EFFECTS OF TAMIZ AND MICROORGANISMS IN THE PRODUCTION OF BRINZA AND CHEESE

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Annotation: Cheese and brynza are food products made by fermenting and processing milk. It is made from cow's, sheep's, goat's, buffalo's milk or a mixture of them. Cheese is good for people who need these substances because of its long-term storage of fats, proteins, calcium and phosphorus minerals. That's why 100 grams of cheese a day provides the body with the necessary minerals and vitamins. This article also discusses information about cheese and cheese, as well as the role of droplets and microorganisms in their production.

Keywords: Milk fermenting enzyme, micrococci, bacterial starters, lactic acid rods, lactic acid streptococci, lactic acid rods, pasteurization.

Исследование влияния тамиза и микроорганизмов при производстве бринзы и сыра

Аннотация: Сыр и брынза являются пищевыми продуктами, получаемыми путем сквашивания и переработки молока. Его производят из коровьего, овечьего, козьего, буйволиного молока или их смеси. Сыр полезен для людей, нуждающихся в этих веществах, поскольку в нем долго хранятся жиры, белки, минералы кальция и фосфора. Именно поэтому 100 граммов сыра в день обеспечивают организм необходимыми минералами и витаминами. В этой статье также рассматриваются сведения о сыре и сыре, а также о роли капель и микроорганизмов в их производстве.

Ключевые слова: Молокофермент, микрококки, бактериальные закваски, молочнокислые палочки, молочнокислые стрептококки, молочнокислые палочки, пастеризация.

Dairy products, taking into account their biological value, occupy a key place among

food products. Among dairy products, cheese is the leader. It is a concentrated, easily digestible protein product with good organoleptic properties. The nutritional value of cheese is due to the high concentration of proteins, fats, essential amino acids, calcium and phosphorus salts necessary for the normal development of the human body.

- ✓ Cheese is also recommended for physical activity, pregnant women and children, as it replenishes energy reserves;
- ✓ Cheese contains more protein than meat and fish;
- ✓ Cheese also contains amino acids that are useful for our body: tryptophan, lysine, methionine. They improve mood, fight stress, lower cholesterol and have a positive effect on liver function. Such invaluable amino acids are absorbed by the body only through food;

Brinza is a representative of pickled cheese, which has recently become very popular. It is usually used in its natural form or for the preparation of various dishes. That's why we talk about cheese in general.

There is evidence that the simplest way to extract milk and therefore turn it into cheese has been known to people for thousands of years BC. Since then, over the centuries, cheeses have become the most common and one of the most valuable food products, penetrating many parts and corners of the world. Let's talk a little bit about the process of making these products. Lactic acid microflora plays an important role in the production of cheese products. It converts lactose into lactic acid, creating the conditions for the subsequent enzymatic transformation of the cheese mass.

The main pathogens of lactic acid fermentation in milk and cheese are lactic acid bacteria, whose culture has become a major factor in cheese production under conditions of milk pasteurization.

To obtain high-quality cheeses, especially in cases of low maturity, a certain amount of lactic acid bacteria is often added to the raw milk. Typically, with all this is introduced pure cultures of lactic acid rods - 0.1-0.2%, and in very small quantities - propionic acid bacteria (1 ml per 1 ton of milk).

There are four main groups of microorganisms in the milk microflora				
lactic acid rod	lactic acid streptococci	micrococci	mesophilic lactic bacteria	

The only source of microflora involved in cheese ripening when using pasteurized milk is yeast prepared in pure cultures of lactic acid bacteria. Carefully pasteurized residual microflora may not be important in this process. Therefore, the choice of crops and the composition of the initial cultures is the most important moment in the technology and formation of the desired type of cheese.

So far, in addition to the type of bacteria, the energy of acid and odor has also been taken into account in the preparation of primary cultures, and more recently the proteolytic ability of lactic acid bacterial strains has also been taken into account. They form two types of multi-variety primary cultures - for small and large cheeses.

At present, the starting products are still structured according to the old method, i.e. the types of lactic acid bacteria are taken into account. In the preparation of cheese, pure cultures of streptococci and sticks are used as a starting product of bacteria. From streptococci, *Str.laktis*, *str.kremorps*, *Str.diacetilactis* and *Leuconostoc acetonicus*.

The first two products are acid-forming and the last of the ones listed above also ferment citric acid, all of which forms the aromatic substance diacetyl and gases. For large cheeses (Swiss and Soviet), two starters are usually used, the first being made from streptococci and the second from lactic acid rods *Helveticum* and *Thermophilic streptococci*. It is also often: propionic acid bacteria are also added. Several strains of the same type of bacteria are introduced into the starting product, so depending on the biological properties of the milk, microorganisms that are more adapted to these conditions develop.

The milk microflora should have four main groups of microorganisms: 1. Lactic acid rods, 2. Lactic acid streptococci, 3. Micrococci 4. Lactic acid rods.

The first group belongs to streptococci, facultative anaerobes. They all withstand heating at 60 ° C and even 65 ° C for 30 minutes. None of the strains grow at a

temperature of 10–12 ° C. The optimum growth temperature is 45-50 ° C. Under such conditions, they shed milk after 13-14 hours and produce 1.39-1.49% lactic acid (155-166 ° T) after 24 hours. All cultures produce dense clots without gas formation and peptonization. Strains of these cultures ferment well glucose, galactose, lactose, sucrose, maltose, levulose, dextrin and do not ferment mannitol, arabinose and sorbitol.

Lactic acid streptococci are cocci and diplococci with specific characteristics of thermophilic facultative anaerobes. They can withstand heating at 60 and even 65C for 60-90 minutes. They do not grow at a temperature of 10–12C. Ferments glucose, galactose, lactose, sucrose, maltose, raffinose and dextrans; do not ferment lightning, arabinose, sorbitol, glycerin and starch. They do not have a catalytic system, do not reduce nitrates, do not form acetone and hydrogen sulfide. They do not have the ability to form gas and peptonize milk.

Making milk to get cheese				
Best before	Storage temperature	milk temperature	CaCl ₂ added kg of milk	time to coagulate milk
24 hour	2-6°C	102-122°C	10-40	30-35 minutes

Micrococci are organisms that do not have aerobic properties. This group of bacteria is less resistant to heat than the previous two, but it grows well at a temperature of 10-12C. Individual strains differ drastically in the fermentation of carbohydrates, and some of the sugars are consumed by acid-forming crops, while others are used without altering the environmental reaction. Milk coagulation occurs within 72-96 hours, and in some strains this ability is not present at all.

Prior to cooking, industrial primary cultures or activated bacterial preparations are added to the milk to replenish the beneficial microflora destroyed during pasteurization and to create the specific properties of the cheeses.

Bacterial starters (BZ) and bacterial preparations (BP) for cheese production differ in the qualitative and quantitative composition of the microflora, its condition, the number of living cells, the form of release, packaging and therefore the purpose and methods.

An important element in cheese production is the lactic acid bacteria added to milk to produce cheese in the form of specially selected and prepared combinations.

Lactic acid bacteria perform the following functions in cheese:

- conversion of the main components of milk (lactose, fat) into compounds that determine the taste and aroma of cheese, its nutritional and biological value;
- activation of the action of milk-fermenting enzymes and stimulation of branch syneresis;
- Participate in the formation of the cheese pattern and its consistency;
- creation of unfavorable conditions for the development of foreign microflora.

For this reason, the quality of cheese depends primarily on the quality of milk made from it. The type of cheese is formed only under the influence of enzyme systems of microorganisms, lactic acid, propionic acid and alkali-forming bacteria of cheese slime and microscopic fungi.

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