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DEVELOPMENT OF A NATIONAL SOUR LACTIC DAIRY PRODUCT BASED ON NON-BOILING CEREALS AND ITS QUALITY EVALUATION

Abstract. The article is devoted to the creation of a national lactic acid product "Flaky Cottage Cheese" on the basis of three kinds of cereal flakes, which do not require boiling. In the course of research the organoleptic and physico-chemical parameters of the obtained product were determined. It was found that the addition of uncooked three-grain flakes to the cottage cheese has a positive effect on the quality of organoleptic indicators of the finished product, i.e. gives the product a particularly pleasant taste and increases its nutritional value.

Keywords: national food, farmer's cheese, non-boiling cereals, quality evaluation.



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Introduction. Kazakh cuisine has never used milk in its raw form. This tradition persists to this day. Nowadays, the production of lactic acid semi-finished products and products is quite widespread. Kazakh dairy products are very convenient to eat directly in cold form. That's why Kazakh cuisine is largely a kitchen of the cold table [1].

The assortment of domestic dairy products is diverse and wide. A special place among them takes cottage cheese – the national lactic acid product.

The national curd product is prepared from kefir or peroxidized sour milk. This is why it is divided into qatyq curd and qurt curd. Sour kefir, qatyq or boiled qurt is poured into a canvas bag and pumped by suspending it. It is then filtered by itself, the yellow water flows out and the curd remains at the bottom [2]. Nutritional and energy value of the national curd product is presented in Table 1 [3].

A healthy diet is always associated with cottage cheese. This product has a subtle flavor, pleasant taste and useful properties. In addition, cottage cheese is very rich in calcium and phosphorus, which are necessary and important for the formation of bone tissue. Also, cottage cheese contains B vitamins that protect arteries from atherosclerosis [4].

Therefore, cottage cheese products are a suitable food product for the creation of new cereal-based recipes and allow expanding the range of domestic dairy products.

Based on the above, the possibility of using three-component cereal flakes that do not require boiling, as an additive to the formulation of the national curd product was studied. The nutritional and energy value of cereal flakes not requiring boiling is given in Table 1. Cereal flakes not requiring boiling were selected as follows:

- oat flakes requiring no boiling;
- corn flakes requiring no boiling;
- buckwheat flakes requiring no boiling [5-7].

Table 1

Nutritive and energy value of cottage cheese and cereal flakes without boiling

Type of product	Protein	Fats, g	Carbohydrate, g	Energy value, kcal
Cottage cheese	18.0	0.6	1.8	88
Oat flakes requiring no boiling	13	6.2	62.1	356
Corn flakes requiring no boiling	8.3	1.2	75.0	325
Buckwheat flakes requiring no boiling	12.8	3.4	66.1	346

Thus, the development of technology for obtaining national curd products of high nutritional value using cereal-based flakes is a promising and relevant direction in the production of national food products.

Research methods and conditions. The aim of the studies is to create the technology of a new national product "Flaky Cottage Cheese" by including three-grain flakes in the composition of cottage cheese, not requiring boiling, and to assess its quality.

In determining the organoleptic and nutritional value of the domestic curd product the following international standards were used:

- NSS 31680-2012. Cheese mass;
- NSS 3622. Milk and dairy products. Taking samples and preparing them for analysis;
- NSS 3624. Milk and dairy products. Titrimetric method of acidity determination;
- NSS 3624. Milk and dairy products. Methods for determining dry matter and moisture.

Research results and discussions. During the research were obtained a control sample of the national cottage cheese product prepared according to the traditional technology and the new national product "Flaky Cottage Cheese" based on three-grain flakes, which do not require boiling.

The composition of the new product, the combination of the product components, organoleptic indicators, the fact that the body is fully provided with all the necessary substances in relation to animal and plant foods.

Cottage cheese contains a significant amount of milk fat and whole proteins, which determines its biological and nutritional value and high digestibility. Adding three kinds of flakes to the finished product, which does not require cooking, increases the nutritional value of the product, increasing its naturalness and useful properties.

The new national product consists of three components:

- cottage cheese from the national lactic acid product;

- three-grain cereal, which does not require boiling;
- table salt.

The principal scheme of preparing cottage cheese on the basis of three kinds of flakes, not requiring boiling, is shown in Figure 1.

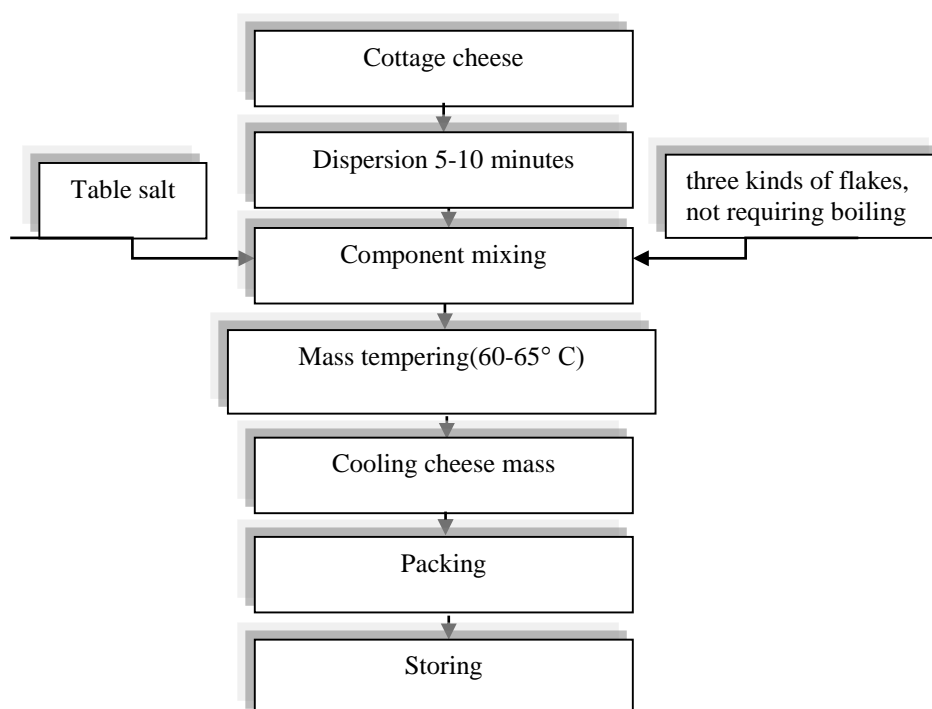


Figure 1. The principal scheme of preparing cottage cheese on the basis of three kinds of flakes, not requiring boiling

The additives were mixed in a component mixer until homogeneous. The duration of mixing was 5 minutes. Tempering of the mass was carried out at a temperature of 60-650 °C. The resulting product was cooled to 60°C.

Evaluation of organoleptic characteristics of the created product was carried out on a 30-point system. Maximum score for appearance and color – 4 points, structure and consistency – 9 points, smell and taste – 15 points [8]. Organoleptic evaluation of national products is presented in Table 2.

Table 2

Organoleptic evaluation of national products

No.	Indicator Name	Cottage cheese	Flaky Cottage Cheese
1	Appearance and consistency	Soft smear consistency or crumbly	Has a soft, pasty consistency or you can feel particles of crumbly flakes
2	Taste and aroma	Pure sour milk	Pure salty sour milk with a distinct taste and pleasant smell of cereal flakes
3	Color	Homogeneous creamy or white color throughout	The whole mass has a homogeneous cream color or white, with grainy flakes.

According to the results of tasting evaluation, the samples of national products with the highest organoleptic indicators were selected. When adding raw three-grain flakes to the cottage cheese, the color of the mass was colored with creamy flakes, and the flakes had a pleasant pronounced taste and aroma.

At the next stage, studies of physicochemical parameters of domestic cottage cheese and the new product "Flaky Cottage Cheese" were carried out (Table 3).

Table 3

Physico-chemical parameters of national products

Indicators	Cottage cheese	Flaky Cottage Cheese
Acidity, °T, not more	145	143
Mass fraction of moisture, %, max	39±1	38±1

Conclusion. According to the results of the research we can draw the following conclusions, i.e. it was established that the addition of three-grain flakes to the national curd product, not requiring boiling, positively affects the organoleptic characteristics of cottage cheese. quality of the finished product, gives the product a particularly pleasant taste and smell, increases its nutritional value.

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**ПІСІРУДІ ҚАЗЖЕТ ЕТПЕЙТІН ҰЛПЕКТЕР НЕГІЗІНДЕ ҰЛТТЫҚ
СҮТҚЫШҚЫЛДЫ ӨНІМДІ ЖАСАУ ЖӘНЕ ОНЫҢ САПАСЫН БАҒАЛАУ**

Аңдатпа. Мақала пісіруді қажет етпейтін үш түрлі дән ұлпектері негізінде жасалатын «Ұлпекті сүзбе» ұлттық сүтқышқылды өнімін жасауға арналған. Зерттеу жұмыстарын жүргізу кезінде жасалған өнімнің органолептикалық және физикалық-химиялық көрсеткіштері анықталды. Сүзбеге пісіруді қажет етпейтін үш дән ұлпектерін қосу кезінде дайын өнімнің органолептикалық көрсеткіштерінің сапасына оң әсер етіп, яғни өнімге ерекше жағымды дәм беріп және тағамдық құндылығының жоғарлайтындығы белгілі болды.

Тірек сөздер: ұлттық тағам, сүзбе, пісіруді қажет етпейтін дән ұлпектері, сапаны бағалау.

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**РАЗРАБОТКА И ОЦЕНКА КАЧЕСТВА КИСЛОМОЛОЧНОГО НАЦИОНАЛЬНОГО
ПРОДУКТА НА ОСНОВЕ ХЛОПЬЕВ, НЕ ТРЕБУЮЩИХ ВАРКИ**

Аннотация. Разработан национальный кисломолочный продукт «Улпекти Сүзбе» на основе трехзлаковых хлопьев, не требующей варки. В ходе исследований определены органолептические и физико-химические показатели разработанного продукта. Установлено, что внесение в сүзбе трехзлаковых хлопьев, не требующих варки положительно влияет на изменение органолептических показателей качества готового изделия, придает особый специфический вкус и аромат, повышает пищевую ценность.

Ключевые слова: национальный продукт, сүзбе, зерновые хлопья, не требующие варки, оценка качества.