

FOOD INDUSTRY

The Development of Cheese Mass Technology with Creopowder "Pumpkin»

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Abstract. Nutritional status of population is one of the most important factors that determines health and gene-fond preservation of a nation. Healthful products of special purposes play an important role in providing balanced nutrition. The use of herbal supplements in this regard provides an endless source of resources. The application of cryopowders, as phytonutrients into «dairy product», their successful combination lead to great perspectives in both social and bio-technological terms. It was also developed the untrimmed recipes of sweet and salty cheese masses with creopowder "Pumpkin" according to therapeutic and preventive purposes. It was studied the recipe features of sweet and salty cheese masses, their impact on the organoleptic, physico-chemical and biological characteristics. The proposed domestic product expands a range of dairy products with the therapeutic and preventive purposes. Patents were granted.

Keywords: Cheese mass, creopowder, organoleptics, recipe, therapeutic and preventive products, biological value.

Introduction. Nutritional status of population is one of the most important factors that determine health and gene-fond preservation of a nation. Nowadays the problem of providing population with rational and balanced diet is highly important. Taking into consideration the environmental conditions, the human diet should contain natural biologically active substances that increase the body's resistance. The use of herbal supplements in this regard provides an endless source of resources.

The application of cryopowders, as phytonutrients into «dairy product», their successful combination lead to great perspectives in both social and bio-technological terms.

Cryopowders - the innovative products that contain necessary vitamins and microelements, created by nature itself. These vegetal additives possess medical-prophylactic substances and supply food with vitamins, macro-, microelements and others.

Products with creopowders are useful for both adults and children. In this regard, we have suggested to study the possibility of creopowder "Pumpkin" useage as phytonutrient in salty and sweet cheese mass technology with therapeutic and preventive purposes.

Materials and methods. The research was conducted in the scientific laboratory of milk technology and dairy products department at Lviv National University of Veterinary Medicine and Biotechnology named after S. Z. Gzhytskoho and in terms of Ltd „ Prometheus (" Lviv milk plant").

The aim of the research was to develop new technologies of sweet and salty cheese masses with creopowder "Pumpkin". Thus, it was studied in detail the use of the proposed creopowder in the technology of dairy products. Besides, there took place a detailed study of the technological features during creopowder application and feasibility of preconditioning and identification of the necessary relationships after being added to milk-base. There were selected two types of cheese as dairy bases (low-fat and 5%) as well as creopowder "Pumpkin" as therapeutic and preventive supplements.

Creopowder "Pumpkin" - standardized supplement. Creo-pumpkin is recommended for people suffering from liver disease, gall bladder, cardiovascular diseases, gastritis, colicky pain, obesity, metabolic disorders, sleep disorders. This supplement is useful to consume having anemia and nervous system disorders. It is recommended for pregnant women as a means of toxicity. Pumpkin enhances the immune system and activates the healing process of gastric ulcers.

Experimental studies included search and identification of optimal ratios of the components in "milk-based" and creopowders, study of their organoleptic and technological indicators, assessment of biological and nutritional value in these cheese products.

On the basis of the previous studies, there were selected the best cheese recipes with which further experiments were conducted. The determining factor in adding supplements was saving or the maximum possible approximation to regulatory characteristics of sweet cheese masses.

The amount of creopowder in a cheese mass was calculated based on their preventive and therapeutic doses of 100-150g of cheese mass. The recipes of cheese masses were numbered for commercial manufacture (assuming 1000 kg of product).

Results and discussion. In recent years among a large number of foods, including milk, products with dietary supplements are occupying much of that part. In this regard, dairy technology also changes as well as the needs and preferences of consumers towards the range of dairy products. Thus, the role of fillers grow tremendously in the manufacture of dairy products. Moreover, the range of their use is especially wide. There are used fillers of animal and vegetable origin. An important task for fillers is to increase biological, nutritional and technological characteristics of the product. This helps create a wide range of products that will have the basic properties of the basic product and the results of their joint Interacting.

In this regard, natural herbal supplements deserve a particular note due to its natural properties and also provide health care properties for dairy products. Thus, scien-

tists suggest to use varieties of fruits and berries, wild herbs, seafood, and other bee products in the manufacture of composite types of butter, soft and hard rennet cheese (Rodionov N., 2000; Pylypenko L. And et al., 2001; Sindikayeva N. V., 2005; Hachak Y. R., Gull O. 2005; Hachak J. R., Bilyk A. 2006, Hachak J. R. Pater A. O. 2008: 2009; Hachak J. R., Zastavna Z. 2010; Stojko V. 2013, Tchaikovskiy A. (2014), Tsisaryk O. Y. (2015).

There were developed milk-protein composition of cheese pastes, drinks, fortified phytonutrients, vitamins and minerals (Donskaja G. A. 2002; Khomenko I. A. et al., 2005; Chagarovsky O. P., 2005; Sharahmatova T. E. and et al., 2005; Hachak J. R., Bilyk A. 2006; Hachak J. R., Shton K. 2010; Pavlyuk N, 2013; Prokopovych I., 2014). In recent years creopowders grow in popularity. The research (Peresichnyj M. I., Korzun V. H, 2003) showed that the application of various creopowders as fillers can create new types of drinks with therapeutic and preventive power that have exquisite taste and organoleptic properties. The use of creopowders help enrich products with vitamins, minerals, dietary fiber. Thanks to their application the chemical composition of food significantly improves as well as their biological value increases. Adding creopowders and their extracts into butter and margarine, taking 1-5% and 0.1-0.5% for solids (creopowders oats and dried apricots respectively) can extend their storage in 1,2-4,0 times and 10-70% respectively. These data show that we may recommend creopowder for use in the production of other dairy products.

While developing the recipes for four types of cheese masses we tried to find the optimal ratio of ingredients in order to obtain the appropriate regulatory palatability listed in the following tables.

The tables (1, 2) present the best recipes of sweet and salty cheese with different fat content using creopowder «Pumpkin». The analysis of digital material from this table shows that in case of an increase of fat in «milk-based product», the number of compounding creopowder

also increases (1000 kg of the product) in salty masses from 9.75 to 13.59 kg; for sweet ones – from 17.23 to 33.61 kg, which is clearly associated with an increased number of sugar into the cheese mass (5%) and fat content of the milk base, which greatly exacerbates the perception of taste in the suggested supplements.

In the overall assessment regarding dairy products, organoleptic and merchandising properties of food products, including milk play an extremely important role.

According to regulations, properties of food define organoleptic, physical-chemical and microbiological parameters. The cheese appearance, its consistency and flavor determine the level of organoleptic quality.

Table 1. Recommended recipes of sweet cheese masses with added creopowder "Pumpkin"

Cheese mass content	Sweet cheese masses	
	Fatless with creopowder	Semifat with creopowder
Fatless cottage cheese	862,07	-
Cottage cheese with 5%	-	840,34
Sugar	120,69	126,05
Creopowder	17,23	33,61
All	1000	1000

Table 2. Recommended recipe salty cheese masses with added creopowder "Pumpkin"

Cheese mass content	Salty cheese masses	
	Fatless with creopowder	Semifat with creopowder
Fatless cottage cheese	974,66	-
Cottage cheese with 5%	-	970,87
Salt	15,59	15,54
Creopowder	9,75	13,59
All	1000	1000

The organoleptic sweet cheese masses with pectin supplements are listed in the table 3.

Table 3. Organoleptic sweet cheese masses with creopowder "Pumpkin"

Cheese mass name	Color, appearance	Smell and taste	Consistence
Cheese masses with fillers due to regulatory requirements	White with color of a filler	Clear, sour-milk, with smell, taste and flavour of a filler	Smooth, tender, moderately solid, with or without the parts of a filler
Salty cheese masses: fatless and semifat sweet with creopowder «Pumpkin»	Light yellow, well-defined yellow	Fresh, salty, a bit sour, light flavour and smell of pumpkin	Smearing, clear speckles of creopowder
Sweet cheese masses: fatless and semifat sweet with creopowder «Pumpkin»	Light cream, cream smooth	Fresh, sweet, a bit sour, explicit flavour and smell of pumpkin	Smearing, clear speckles of creopowder

The analysis of the organoleptic characteristics of the cheese masses with creopowder "Pumpkin" shows that they haven't undergone significant changes and mostly complied with regulatory requirements.

Thus, the color of sweet cheese masses was a light cream or cream with some patches of yellowish speckles from chopped powder. The color samples of salty cheese masses rated as light yellow, yellow and less intense.

The smell of cheese masses remained fresh, sour-milk. However, the smell of creopowder was distinctly identified in the samples of sweet masses, whereas not in the salty ones. The taste of tested samples was sweet or salty, while the taste of creopowder was clearer in sweet sam-

ples. The consistency of prototypes was smooth, soft, pasty.

Another important group of indicators to characterize the cheese masses is their physicochemical characteristics. As you know, all the cheese masses, produced by dairy industry of Ukraine, have to meet certain regulatory requirements (titrated acidity, moisture and fat content, energy value).

The physical and chemical properties of sweet and salty cheese masses prototypes with creopowder are shown in table 4.

The analysis of digital material from the table above shows that the creopowder addition definitely affects the physical and chemical characteristics.

The titrated acidity of salty cheese mass prototypes was 124-130°T, moisture content - 62-60% and SR - 40-

38%, and the energy value accounted for 164 and 118 kcal/100g. The titrated acidity of sweet cheese mass prototypes was 126-134°T, moisture content - 63-66% and SR - 34-37%.

Table 4. Principal physical and chemical properties of cheese masses with creopowder "Pumpkin"

Cheese mass name	Acidity (°T)	Weight percentage			Energy value (kcal /100g)
		humidity	SR	fat,%	
The regulatory values of cheese masses	120-140	60-70	-	semifat 4-6	120-180
Salty cheese masses: fatless and semifat sweet with creopowder «Pumpkin»	130/124	60/62	40/38	semifat; 4,8	118/164
Sweet cheese masses: fatless and semifat sweet with creopowder «Pumpkin»	134/126	63/66	37/34	semifat; 4,6	128/174

At the same time it should be noted that the application of food supplements into the cheese masses along with the therapeutic and preventive actions leads to the increased energy value and has a positive impact on the content of vitamins in test prototypes.

Thus, the use of creopowder "Pumpkin" in the cheese masses technology with different fat content and of different type, increases their biological value and meets regulatory requirements for this type of product. The investigation was granted with a patent in Ukraine.

Conclusions. It was studied the possibility of creopowder "Pumpkin" application as a component of health care in cheese masses. The technology of cheese masses with creopowder "Pumpkin" involves the use of sugar or salt. It was studied the organoleptic, technological and commercial data of cheese mass characteristics with creopowder "Pumpkin". The proposed cheese masses with creopowder "Pumpkin" had a pleasant appearance, regulatory physico-chemical characteristics.

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Разработка технологи творожных масс с использованием криопорошка «Тыква»

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Аннотация. Разработаны промышленные рецептуры сладких и соленых творожных масс лечебно-профилактического направления с криопорошком «Тыква». Изучено рецептурные особенности соленых и сладких творожных масс, их влияние на формирование органолептических, физико-химических и биологических характеристик. Предлагаемая продукция расширяет отечественный ассортимент молочных продуктов лечебно-профилактического направления. Разработки защищены патентом.

Ключевые слова: творожные массы, криопорошок, органолептика, рецептура, лечебно-профилактические продукты, биологическая ценность.