**ОДЕСЬКА НАЦІОНАЛЬНА АКАДЕМІЯ
ХАРЧОВИХ ТЕХНОЛОГІЙ**

ЗБІРНИК
НАУКОВИХ ПРАЦЬ
МОЛОДИХ УЧЕНИХ, АСПІРАНТІВ ТА СТУДЕНТІВ

**ОДЕСА
2019**

ББК 36.81 + 36.82
УДК 663 / 664

Одеська національна академія харчових технологій
Збірник наукових праць молодих учених, аспірантів та студентів
Міністерство освіти і науки України. – Одеса: 2019. – 179 с.

Збірник опубліковано за рішенням вченої ради від 02.07.2019 р., протокол № 12
За достовірність інформації відповідає автор публікації

РОЗДІЛ 3

СУЧАСНІ ТЕНДЕНЦІЇ В ТЕХНОЛОГІЇ ПИТНОЇ ВОДИ ТА ПЕРЕРОБЦІ М'ЯСА, МОЛОКА Й МОРЕПРОДУКТІВ

— Onion dried ground (10 g). This is natural product that can be an alternative to any seasoning. In comparison with other purchased spices, the cooked onion in its dried hands is characterized by a more rich aroma and high content of nutrients. It helps to improve the taste of any dish, enrich it with iodine, glucose, essential oil, vitamins C, A, B1. You can dry the purchased or grown on your own onions beds. In the second case, it requires proper cleaning and preparation for drying;

— Savory dried (5 g). A unique natural composition of the thyme has a beneficial effect on the human body. The plant has a characteristic smell of phenolic compounds, contains essential oils (thymol and carvacrol), proteins, carbohydrates, and fiber. Of vitamins can be identified niacin (B3 or PP), beta-carotene (A), folic acid (B9), vitamin C and pantothenic acid (B5). The plant also contains: thiamine (B1), riboflavin (B2), pyridoxine (B6), and others. Mineral composition of thyme is rich in such trace elements as: potassium, phosphorus, magnesium, calcium, and others. The trace elements are copper, selenium, manganese, iron, and the like;

— Rosemary dried (5 g). The most remarkable useful property of rosemary is without a doubt its immune stimulating effect, protects against the onset of various diseases. Other useful properties of rosemary include its tonic, antibacterial, analgesic, cholagogue, wound healing and sedative action.During experiments, the proportion of 10 g per 100 g minced meat is permissible and most attractive on the organoleptic properties.

Similarly, the method of increasing the addition of a mixture of beets, in the proportion of the same as in the mixture of carrots, to the meat raw material, it was determined that at an increased concentration of 1% to 5% per 100 g, the organoleptic parameters changed to the side of the sweet-spicy tint. That is why, the optimum choice of using the mixture with beets was to add it to sausage minced meat with beef and pork, as one of the options for replacing chemical preservatives with natural.

The direction of using dried plant mixtures in meat products is very popular because it allows replacing preservatives and additives with more natural ingredients. These ingredients give meat products a more pronounced taste and make the product unique, new to the market and more attractive to potential consumers. Organoleptic and organic components of the product are very valuable today, and especially in fast-food products, as modern consumers are in constant rhythm and have a great lack of vitamins, minerals and hormones, which causes the most common diseases of the gastritis, ulcers and gastrointestinal disorders . The purpose of research on the use of vegetable dry mixes in meat semi-finished products is to create products balanced in biological and nutritional value.

Supervisor – Associate Professor A. Soletska

STUDY OF VEGETABLE RAW MATERIALS INFLUENCE ON CRYOSCOPIC TEMPERATURE AND THE CONTENT OF FREE AND BOUND MOISTURE IN MILK-VEGETABLE BLENDS

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Introduction. In recent years in Ukraine, a group of structured dairy based dessert products (ice cream, mousse, creams, sambukes, etc.) are particularly popular among consumers . Such food systems require the obligatory content of stabilizers and stabilization systems: starches, gums, pectins, proteins, sulfated polysaccharides, their composite mixtures

and integrated complexes with emulsifiers. This results, on the one hand, in increasing the cost price of the finished product, since most of these nutritional supplements do not produce domestic enterprises, and on the other hand, such compounds and their mixtures, mostly chemically modified and synthesized, not only do not affect the nutritional value of finished products, but also have some restrictions for the application. Therefore, a promising trend is to expand the range of ice cream on the basis of natural functional and technological raw materials of vegetable origin, in particular vegetable [1].

The actuality of the problem is to expand the range of ice cream with biologically complete vegetable raw materials, which will improve the nutritional structure of consumers of all age groups.

The purpose of the research is to study the influence of vegetable raw materials on the cryoscopic temperature in milk-vegetable blends.

The object of research is the technology of ice cream.

The subject of research is paste from beet and broccoli, samples of blends and milk-vegetable ice cream.

The materials of the research work were: whole milk - DSTU 3662-97, dry non-fat milk - DSTU 4273:2003, cream - DSTU 7519:2014, sugar - DSTU 4623:2006, water - GOST 2874-82, beet - DSTU 7033:2009, broccoli - DSTU 8147:2015.

Research results. The influence of vegetable raw materials on effective viscosity and cryoscopic temperature of mixtures of milk ice cream with vegetable raw material and the dynamics of freezing of water in a product in a wide range of low temperatures [2] was investigated.

Yu.A. Olenev [3] identified in the aqueous phase of blends for ice cream various types of concentration of individual constituents (sucrose, mineral salts, lactose, mono- and disaccharides of fruit and berry raw materials) and their influence on the value of T_{cr}. It has been established that for milk-based ice cream (milk, cream, plombir without fillers and with traditional stabilizers - starch, flour, carboxymethylcellulose, pectin, etc.), the value of T_{cr} is from -2,01 to -3,41 ° C, and for ice cream on the fruit-berry (vegetable) basis - from -3,84 to -4,44 °C.

The values of the cryoscopic temperature have been experimentally determined, the content of the bound water of blends for milk-vegetable ice cream has been calculated. To justify rational content vegetable paste in milk ice cream of the study determined cryoscopic temperature (T_{cr}) of milk-vegetables blends, which contain from 5 to 20% activated filler. This T_{cr} affects the proportion of bound water, what causing the formation of creamy consistency of the finished product after the hardening process and regimes of freezing in the technological cycle of production of ice cream.

The cryoscopic temperature of the investigated mixtures is given in Table. 1

Table 1 – Chemical composition and cryoscopic temperature of ice cream blends

Milk Ice Cream (mass fraction of fat 5%; mass fraction of sugar 15,5%)	Composition of the blend, %					t_{cr}ºC measured./t_{cr} ºC calculated/Δt ºC
	DNDR	stabilizer	water	DM of vegetables	SP	
Control	10,0	0,50	69,0	-	-	-2,51/ -2,18/0,33
5 % puree	9,5	0,38	68,62	1,0	0,105	-2,56/-2,18

						/0,38
10 % puree	9,0	0,25	68,25	2,0	0,210	-2,59/-2,18 /0,41
15% puree	8,5	0,13	67,87	3,0	0,315	-2,62/-2,17/ 0,45
20% puree	8,0	0	67,50	4,0	0,420	-2,64/-2,16 /0,48

Despite the slight increase in water content in ice cream during increasing the amount of vegetable puree, there is a slight decrease in the cryoscopic temperature from minus 2,51 to minus 2,64 ºC. All calculated values of the cryoscopic temperature for blends of milk-vegetable ice cream for the different ratio between milk and vegetable bases are the same, which proves their possible interchangeability without affecting the content of frozen water. According to the analysis of the chemical composition of all samples, a slight change in the dry matter content in ice cream (from 69 to 67,5%) should be noted, even with a maximum 20% replacement of the milk blend in vegetable puree. That is, the balance of dry matter in the mixtures is practically preserved in the established range of changes in the content of vegetable paste. Thus, partial replacement of the milk blend in vegetable puree in the studied range will not cause deterioration of the physical and chemical indicators of ice cream quality and will not significantly affect the technological parameters of its production. Taking into consideration the above, the introduction of a new type of ice cream with vegetable puree will not require the technical re-equipment of the existing production provided the vegetable component is delivered on request from the canning industry enterprises.

Conclusions. Thus, the rational content of vegetable paste from broccoli and table beet (for a ratio of 1: 1) in the amount of 10 to 15% were developed, which ensures high quality of the finished product. According to the values of the cryoscopic temperature of ice cream blends with vegetable puree, the possibility of ice cream production under the generally accepted modes of processing was confirmed.

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ЗАСТОСУВАННЯ СТРУЖКИ КОКОСУ І ШОКОЛАДУ В ТЕХНОЛОГІЇ СИРКОВИХ МАС

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Останнім часом одним із перспективних напрямків розвитку молочної галузі є виготовлення комбінованих продуктів з регульованим складом і наперед заданими

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Ум. друк. арк. 10,4