
TECHNOLOGY OF MOUSSE DESSERTS WITH REDUCED ENERGY VALUE

Medvedieva A. O., Antoniuk I. Yu.

DOI <https://doi.org/10.30525/978-9934-26-697-3-12>

INTRODUCTION

In the context of the worsening environmental situation, the deterioration of the quality of the environment, more and more people began to pay attention to their state of health and look for ways to maintain it. One of the main ways to improve the vital activity of the human body is nutrition. At the same time, the products that are in the daily diet should not only bring pleasure and provide nutrients, but also perform preventive functions: reduce the risk of developing various diseases, protect against adverse environmental conditions¹.

At the current stage in world practice, there is a tendency to create food products for health purposes due to the introduction of plant raw materials into their composition, which contain a significant amount of proteins, vitamins, macro- and microelements, dietary fibers, etc².

Desserts are popular among the population of all countries of the world. However, their disadvantage is that they contain a small amount of biologically active substances and have a high energy value. One of the promising directions for the development of modern sweet products is the improvement of the nutrient composition and giving it health-improving properties.

1. The emergence of prerequisites and formulation of the problem

Many domestic and foreign scientists were engaged in research and problems of creating desserts with improved nutritional properties.

The purpose of the work is the analysis and development of the latest technology of mousse desserts of reduced energy value.

In accordance with the set goal, the following tasks were solved:

- determination of the general characteristics of the mousse dessert production process in restaurant establishments;

¹ Healthy food is available to each of us. URL: <https://surl.li/yazqii/>.

² Modern trends in the production and consumption of sweet dishes. URL: <https://surl.li/djqavj>.

- analysis of the recipe composition and technology of mousse desserts in restaurant establishments;

- study of innovations in the technology of production of mousse desserts;

- development of technology of mousse desserts with plant substitutes.

Object of research: technological and organizational principles of the introduction of mousse desserts.

Subject of research: Greek yogurt, monk fruit, acai puree, apple mousse, mousse desserts.

2. General characteristics of the process of production of mousse desserts in restaurant establishments

Desserts are very popular among the population all over the world. They are not only a source of pleasure and positive emotions, but also have high organoleptic indicators and quality characteristics. Let's consider the main factors that affect the popularity of sweet dishes:

- various flavors and textures that allow you to satisfy different consumer preferences;

- production of the hormone happiness – dopamine;

- part of national culture;

- wide and varied range;

- ease of preparation, availability;

- constant updating of recipes that have original combinations of flavors;

- development of products with useful properties.

Desserts are mainly a source of carbohydrates and fats, because all recipes include easily digestible sugar, with excessive consumption of which metabolic disorders, pancreatic activity and obesity can occur. The energy value of sweets is on average from 50–500 kcal per 100 grams. Their nutritional value is determined by those products included in the recipe composition: berries and fruits (fresh, dried or canned), juices and syrups, eggs, flour, dairy products (butter, cream, cheese, milk, sour cream), aromatic substances (vanillin, cinnamon, coffee, citric acid, nutmeg, citrus peel, cocoa, ginger), chocolate, raisins, seeds and nuts. The variety of raw materials used to prepare desserts allows you to get a sweet dish with different calories, protein, fat, carbohydrates, vitamins and minerals, as well as interesting organoleptic indicators.

Desserts are classified according to various characteristics, depending on the main ingredient, serving temperature, cooking method, consistency and ethnic origin³. They differ in many indicators, in particular the texture, features of

³ Технологія продукції ресторанного господарства [Текст] : підручник / А. Д. Салавеліс, С. Л. Колесніченко, Ю. О. Козонова, С. О. Поплавська. Одеса : Освіта України, 2017. 312 с.

presentation. Among the most popular sweet dishes are: tiramisu, panacota, gelato (Italy), cheesecake, apple pie, brownie (USA), creme brulee, eclairs, macarons (France), pahlava (Turkey, Eastern countries), strudel (Austria, Germany). Ukraine also has its own traditional and popular desserts, among them we can single out verguns, poppy seed rolls, shuliks, various cakes and pastries.

One of the trendy sweet products today is mousse, based on which cakes, pastries, and desserts are prepared. Mousse desserts are delicate and airy treats that have a characteristic light, creamy texture, achieved by whipped cream, egg whites or other foaming ingredients, as well as thickeners such as gelatin or agar-agar.

Mousse dessert has a light and airy texture, due to which they melt in the mouth. Since mousses are the mainstay of cakes and pastries, let us consider their structure.

Base-cake – most often used is biscuit, cheesecake, brownie, dacquoise on nut or almond flour.

The main integral ingredient is cream-based mousse and gelatin.

Next layer – filling: strawberry or cherry confit, fruit, coconut or nut caramel layer, compote, kuli or kurd.

Coating – chocolate velour or mirror glaze.

An example of mousse desserts is shown in Fig. 1.

The main ingredients of mousse desserts are whipped cream, egg whites, cream cheese, yogurt, chocolate, vanilla, fruits and berries (raspberries, mangoes, passion fruit, blueberries, cherries, currants), coffee, sugar and sweeteners, honey, condensed milk, agar-agar, gelatin, various types of flour, starches and leavening agents, nuts, lemon zest or juice, lime, orange, alcohol (liquors, rum, cognac), spices (cinnamon, cardamom, ginger).

Mousse desserts can be characterized by the following indicators: a variety of flavors that combines chocolate, fruit and berry puree, coffee, caramel or cheese; elegant appearance thanks to exquisite design (mirror glaze, fresh berries, fruits, chocolate decor or nuts); versatility, because the product can

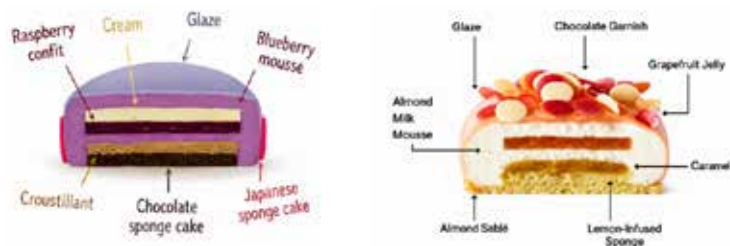


Fig. 1. Building mousse desserts

Source: Pinterest – Access mode: <https://www.pinterest.com>

be served as an independent dessert in creamery or be a filling for cakes and pastries; low calorie content.

Depending on the main ingredient included in mousse desserts, the following popular options are distinguished⁴:

- chocolate mousses based on different types of chocolate;
- fruit and berry mousses consisting of puree or fruit and berry juices;
- cheese mousses with the addition of cream cheese or other soft cheeses;
- coffee mousses;
- caramel mousses.

Therefore, the range of mousse desserts depends on the main ingredient that affects the organoleptic performance of the sweet product.

Analyzing the assortment of sweet products based on mousses in restaurants in the city of Kyiv⁵, we can conclude that mousses are mainly part of cakes and pastries, in some cases they are served as an individual product.

Mousse wedding cakes are especially popular because they combine an elegant look with less weight, which is important for multi-tiered compositions. Elegant colors, subtle decor and the ability to create a unique shape allow you to harmoniously fit the cake into any style of the holiday.

Mousse cakes are also ideal for gender party due to the layered structure of the inner layer or confit can be brightly colored, symbolizing the sex of the child. Such an element of surprise looks elegant and adds emotionality to the holiday without losing style.

Mini mousse cakes (bento format) – are ideal for individual gifts and small celebrations. They are designed according to the personality of the customer: improvised inscriptions, minimalist illustrations or symbolic elements. The compact size allows you to experiment with the design and makes each dessert special.

Mousse desserts are prepared only from natural ingredients, so their shelf life is from 2 to 5 days at a temperature of 0... +4 °C.

3. Analysis of mousse dessert technology

The classic basis of mousse desserts is apple mousse, which is used as an independent dish or as a layer in cakes and pastries. Mashed apples, sugar, gelatin, water, vanilla are the recipe ingredients. The quality of the components is extremely important for obtaining desserts with an excellent organoleptic profile, while each component in the recipe performs a certain function (Fig. 2)⁶.

⁴ Mousse desserts – what are and how to cook. URL: <https://surl.li/vpnfzm>.

⁵ Mousse cakes and desserts in Kyiv establishments. URL: <https://surl.li/ztdxoq>.

⁶ Dessert preparation technology. URL: <https://surl.li/awweve>.

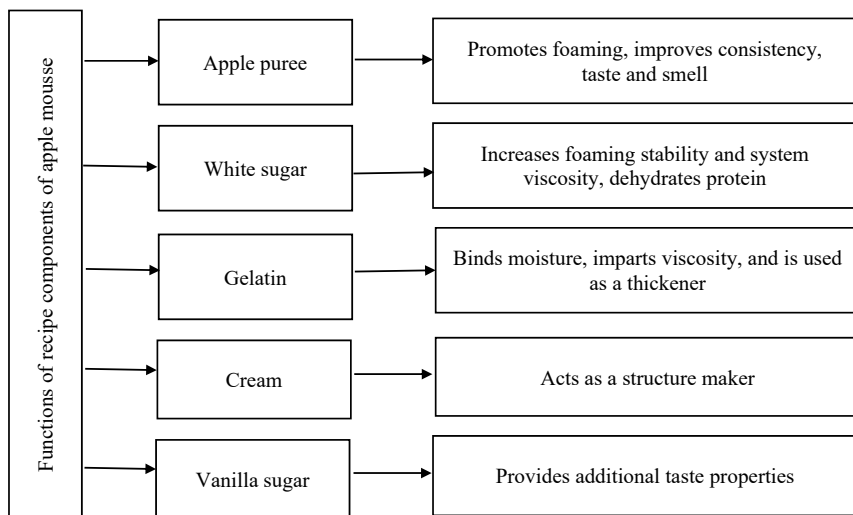


Fig. 2. Functions of recipe components of apple mousse

Having considered the functions of the ingredients of apple mousse, its recipe composition was analyzed (Table 1)⁷.

Table 1

Analysis of the recipe composition of apple mousse

Name of recipe components	Requirements for prescription components	Content, %	Mechanical culinary processing
Apples	Round fruit, color depending on the variety, juicy, dense consistency, sweet taste	40	Cleaning, removal of core and seeds, cutting
Sheet gelatin	The sheet is colorless or yellowish in color, pressed, odorless and tasteless	5	Soaking in water, stirring until completely dissolved
White sugar	Sweet, crystalline, white in color, without extraneous taste and smell	10	Sieving, dissolution
Cream	Homogeneous consistency, without lumps of white color with a cream shade, sweet taste, without extraneous odors	45	Strain
Vanilla sugar	Fine crystalline powder, without lumps and foreign inclusions, white, sweet, with a pronounced smell of vanillin	0.1	Sieving
Total		100	

⁷ Apple mousse. URL: <https://surl.li/rsreip>.

One important aspect of making apple mousse is the right kind of apples. It is best to use sweet and sour varieties with a pronounced aroma and not too dense pulp that boils well, for example: “Antonivka”, “Simyrenko”, “Slava Peremozhstiam”. It is also possible to combine several types for a variety of flavors.

In order to identify prospects for improving the organoleptic and structural properties of apple mousse, an analysis of the technological process of its production was carried out (Table 2).

Table 2

Analysis of the technological process of apple mousse production

Name of the technological operation	The goal that is achieved	Parameters of the technological operation	Physico-chemical processes taking place
1	2	3	4
Preparation of gelatin mixture			
Swelling of gelatin	Soaking of gelatin in water	$\tau = 10 \text{ min}$	The process of water absorption, mass compaction, gel formation
Preparation of applesauce			
Mechanical culinary processing of apples	Washing, peeling, removal of core and seeds, slicing	–	Damage to structure integrity, oxidation of phenolic substances
Stewing	Obtaining a soft consistency	$\tau = 5\text{--}7 \text{ min}$	Decay of pectin, caramelization of sugars, evaporation of moisture, oxidation
Rubbing	Achieving a puree-like consistency	–	Destruction of cellular structure, release of aromatic compounds, activation of enzymes
Mousse preparation			
Combining ingredients of sugars and applesauce	Dissolving sugar in warm applesauce	$T = 80 \text{ }^{\circ}\text{C}$	Obtaining a uniform consistency
Cooling applesauce	Obtaining the required temperature	$T = 18 \text{ }^{\circ}\text{C}$	Gelling of pectin, slowing down of enzymatic reactions
Mixing puree and gelatin	Formation of a gel-like structure	–	Hydration and denaturation of gelatin, diffusion of gelatin in puree, beginning of gelation, stabilization of the structure

Continuation of table 2

1	2	3	4
Whipping cream	Conversion of liquid to air foam	$n = 3000 \text{ RPM}$ $T = 4-7 \text{ }^{\circ}\text{C}$ $\tau = 5 \text{ min}$	Denaturation of proteins, formation of fat-protein network, aggregation of fat globules
Coupling of formulation components	Obtaining a homogeneous mass	$\tau = 5 \text{ min}$	Moisture binding, partial transition to gel state
Pouring into molds and cooling	Obtaining a stable texture and taste of the dessert	$T = 2-4 \text{ }^{\circ}\text{C}$, $\tau = 2 \text{ hr}$	Stabilization of air foam, gelatin gelling, gradual crystallization of sugar, thickening of pectins
Porting and design	Preparation for implementation	$T = 8 \text{ }^{\circ}\text{C}$	–

To prepare a high-quality mousse dessert, you need to pay attention to such important technological factors as foam formation, speed, temperature and duration of whipping.

4. Innovations in mousse dessert technology

The modern production of mousse desserts is actively developing thanks to a combination of innovations in science, the latest technologies and healthy eating trends. Let's consider the key trends that make it possible to create mousses with improved nutritional composition, organoleptic indicators and health-improving properties:

- use of the latest gelling agents and stabilizers (agar-agar, pectin, xanthan gum, guar gum, carrageenan);
- use of components that allow you to enrich the mousse with useful things: calcium, iodine, collagen, probiotics;
- low-calorie sweeteners of the new generation (alulose, monk fruit, erythritol and stevia);
- addition of prebiotics, superfoods, vegetable protein (pea, soy, almond);
- use of natural dyes (beets, turmeric, spirulina) and flavorings.

A large number of scientists apply the above methods of improving the technology of mousse desserts in their developments.

Mikvabishvili I. and Hnitsevich V. determined a characteristic feature of preparing desserts with a foam structure with the addition of apples, carrots and rowan⁸. Thanks to the added raw materials, the improved mousse improved

⁸ Міквabішвілі І., Гніцевич А. Технологія мусу на основі плодово-овочевої композиційної суміші. URL: <https://surl.li/pcjrtd>.

its texture, which became silky, foamy, and a pleasant unique taste and aroma appeared. The developed dessert is characterized by an increased content of nutrients: dietary fiber increased by 2.7 times, proteins – by 4.07 times, the amount of vitamins C, B₁, B₂ and PP also increased, and the energy value decreased by 34%.

Scientists of the Poltava University of Economics and Trade proposed the use of pectin-containing fruit raw materials in dessert technology. To improve structural and mechanical properties, puree was introduced from blackcurrant berries, argus, cranberries and chenomeles fruits⁹. On the basis of experimental studies, it was established that gelling juices from various types of pectin-containing raw materials have a positive effect on the strength and structural and mechanical properties of panacotas. The resulting sweet dishes have an increased content of dietary fiber and are characterized by an improved vitamin and mineral composition.

Scientist N. A. Dzyuba modeled food compositions with a given nutrient composition in order to create healthy food products. As a bioprotector, collagen hydrolyzate was added to the recipe of creamy cheese mousse, which not only gave functional properties, but also improved the biological value of the dish¹⁰. Tasting evaluation of the sensory indicators of the developed mousses showed high consumer properties of new dessert dishes. During the research, the optimal shelf life of sweet dishes was determined, which was 5 days at a temperature of $(0 \pm 2) ^\circ\text{C}$, a humidity of no more than 65% in glass containers.

At the Department of Restaurant and Craft Technologies of the State University of Trade and Economics, the influence of various dragle-forming components on the structure of pumpkin-blind mousse dessert was studied¹¹. A sweet dish formulation was developed with the addition of gelatin, agar and pectin; the organoleptic indicators of the dessert were studied and it was determined that the mousse with gelatin received the highest score. The authors also determined the vitamin and mineral composition of dishes, which is characterized by an increased content of vitamin E, potassium, manganese, copper, and zinc. The proposed desserts are recommended to be used as a component of a balanced diet.

⁹ Хомич Г. П., Горобець О. М., Наконечна Ю. Г., Чоні І. В., Тесленко Н. В. Використання пектиновмісної сировини в технології десертних виробів. *Науковий вісник Полтавського університету економіки і торгівлі. Серія «Технічні науки»*. 2023. № 2, С. 18–25. DOI: <https://doi.org/10.37734/2518-7171-2022-2-3>.

¹⁰ Дзюба Н. А. Композиційне проєктування полікомпонентних мусів біопротекторної дії. *Вчені записки Таврійського національного університету ім. В. І. Вернадського. Серія: Технічні науки*. 2019. Том 30 (69). № 5. Частина 2. С. 86–92.

¹¹ Грабовська О. В., Березова Г. Дослідження драглеутворювальної основи мусових десертів. URL: <https://surl.lu/qaznss>.

Rubanka K. V., Terletska V. A., Pysarets O. P., Bratus Yu. V. were engaged in the creation of food concentrates for mousse “Cranberry” with filler from a multi-component mixture based on tea. Based on the results of the study of the foaming ability of the improved sweet dish, it was established that the optimal amount of the new recipe ingredient is 4%¹². When adding a multicomponent mixture in such a concentration, the mousse is characterized by high organoleptic properties (attractive appearance and taste of tea), and also has appropriate structural and mechanical characteristics.

At the National University of Food Technology, the possibility of replacing cow's milk with vegetable milk in the recipe of mousses has been investigated. Due to the replacement of functional ingredients in sweet dishes, the consistency has become delicate, uniform, with a pleasant taste and aroma¹³. In order to increase the amount of nutrients (vitamins C and group B, copper, iron, calcium, potassium, cobalt, zinc and magnesium), raspberries, bananas and mangoes were added to the composition of the mousses. Based on the results of the research, the optimal amount of structure former was established, namely 10 g of gelatin to obtain the appropriate structure.

5. Research results

Obesity in Ukraine is a serious problem that has affected the adult and child population. There has been a steady increase in the number of overweight people in recent years¹⁴. According to the Public Health Center of Ukraine, about 59% of the adult population has excess body weight, of which 24.8% are obese. And among children, 22% are overweight and 8% are obese. The main cause of health problems is unsustainable nutrition (excessive consumption of fatty and sweet foods), a sedentary lifestyle.

Mousse desserts are usually quite high in calories, especially in the classic version, due to the high content of fat, sugar and cream. Therefore, the development of low-calorie sweet dishes is an urgent task of modern nutritionology. Based on the results of the study of the apple mousse recipe, it was determined that the dessert includes sugar and cream of 33% fat content. Therefore, it was decided to improve the technology of the dish by replacing the ingredients with the sugar substitute – monk fruit and Greek yogurt. To

¹² Рубанка К., Терлецька В., Писарець О., Братусь Ю. Дослідження структурно-механічних властивостей збивних солодких страв на основі чаю. URL: <https://surl.li/lbmrf>.

¹³ Михайличенко А. В., Фурманова Ю. П. Муси на основі рослинного молока без цукру як альтернативна безлактозна продукція для закладів ресторанного господарства. *Проблеми формування здорового способу життя у молоді*. Одеса : ОНАХТ, 2019. С. 151–153.

¹⁴ Кравчук Н. М., Польовик В. В., Клец Д. О. Вдосконалення технології десертів. URL: http://nbuv.gov.ua/UJRN/molv_2018_11%282%29_125.

improve the nutritional and biological value of the dish, part of the applesauce was replaced with berry purees (asai, blueberries and currants).

Monk fruit is a natural sweetener made from arhat, a perennial herbaceous vine from the pumpkin family. It belongs to low-calorie sweeteners, because it contains no calories at all and has a zero glycemic index, which makes it an ideal option for those who want to lose weight, get sick or monitor their blood sugar levels¹⁵. Monk fruit has a pleasant caramel aroma and a delicate fruity taste. The sweetener is recognized as a safe product for consumption by many regulatory authorities, including the Food and Drug Administration. Due to its heat resistance, monk fruit can be used to prepare various dishes, including pastries. Eating the sweetener has a positive effect on the functioning of the body, it has calming and anti-inflammatory properties, strengthens the immune system, and is a natural antioxidant.

Acai berries are round fruits measuring 2.5 cm that grow on acai palms in the tropical forests of Central and South America. They have a dark purple skin, yellow pulp, the taste is something between blackberry and unsweetened chocolate¹⁶. Fresh berries have a short shelf life, so they are exported in the form of frozen fruit puree, dry powder or squeezed juice. Acai berries are rich in vitamins (A, C, E), minerals (calcium, magnesium, zinc) and antioxidants, which help protect the body from the harmful effects of free radicals. One of the key advantages of berries is the high content of anthocyanins – natural antioxidants, which are also present in grapes and blueberries. However, the concentration of these substances in acai is much higher. Compared to other superfoods, acai berries contain a maximum of antioxidants and a minimum of sugar. The beneficial properties of berries are antioxidant and disease protection, strengthening of the cardiovascular system, support of the immune system, improvement of digestion and antiaging effect.

Greek yogurt – is a fermented milk product with an increased proportion of dry substances, which is obtained as a result of fermenting milk with pure cultures of lactic acid bacteria. Thanks to the special production technology, yogurt has a thick creamy structure with a wonderful creamy note¹⁷. It contains protein, minerals (calcium, magnesium, potassium, iodine), vitamins (B2, A, PP). Greek yogurt has probiotic properties, has a positive effect on the immune system, contributes to the normalization of digestion, can be used in dietary nutrition, suppresses the development of pathogenic microflora. It contains less sugar and carbohydrates, as part of

¹⁵ Monk Fruit. URL: <https://surl.li/uafsyk>.

¹⁶ What are acai berries and why should they be consumed. URL: <https://surl.li/tdfwss>.

¹⁷ Greek yogurt. URL: <https://surl.li/ybwogi>.

the lactose contained in all dairy products is removed together with whey, and the rest of it is converted into lactic acid.

During technological research, technologies and recipes for mousse desserts were developed:

- apple mousse based on Greek yogurt, monk fruit and acai puree;
- apple mousse based on Greek yogurt, monk fruit and blueberry puree;
- apple mousse based on Greek yogurt, monk fruit and currant puree.

The recipe composition of the developed apple mousse based on Greek yogurt, monk fruit and acai puree is presented in the Table 3. Since monk fruit is 150–200 times sweeter than sugar when replaced, the sugar content decreases accordingly.

Table 3

The recipe composition of apple mousse based on Greek yogurt, monk fruit and acai puree

Name of raw materials	Control	Experiment 1	Experiment 2	Experiment 3	Experiment 4
Apples	40	40	38	33	28
Sheet gelatin	5	5	5	5	5
White sugar	10	–	–	–	–
Cream	45	–	–	–	–
Vanilla sugar	0.1	0.1	0.1	0.1	0.1
Greek yogurt	–	45	45	45	45
Monk Fruit	–	2	2	2	2
Masai puree	–	8	10	15	20
Total	100	100	100	100	100

To determine the optimal amount of acai puree in apple mousse technology, a tasting evaluation of experimental samples of apple mousse was carried out. Based on the obtained results, it has been proven that the addition of acai puree in the amount of 5 to 10 g allows you to get apple mousse, which is characterized by a moderate sweet taste, a soft pink color; with an increase in its concentration to 15 g, a slight astringency appears, and the dish acquires a light pink shade. When adding 20 g of berry puree, the color changes to bright purple, the consistency is slightly compacted, and the astringency becomes more pronounced. Experiment 3 (4.95 points) received the highest rating, which was used for further research.

Replacing cream with Greek yogurt in apple mousse technology changes the cooking technology, as the technological operation of whipping the dessert with a mixer becomes unnecessary.

Table 4 provides an analysis of the chemical composition of a control and test sample of apple mousse based on Greek yogurt, monk fruit and acai puree.

Table 4

Comparative analysis of the chemical composition of apple mousse based on Greek yogurt, monk fruit and acai puree

Indicators	Units of measurement	Control	Experiment	Difference, units	Difference, %
Proteins	g	2.15	7.87	5.72	265.44
Fats	g	9.18	7.57	-1.61	-17.55
Carbohydrates	g	15.59	9.91	-5.69	-36.46
Dietary fiber	g	0.80	5.93	5.13	641.25
Energy value	kcal	173.15	62.53	-110.62	-63.89
Mineral substances					
Calcium	mg	57.10	109.20	52.10	91.24
Potassium	mg	163.45	192.85	29.40	17.99
Magnesium	mg	7.28	14.03	6.75	92.72
Phosphorus	mg	38.15	50.15	12.00	31.45
Sodium	mg	41.00	133.65	92.65	225.98
Iron	mg	0.30	2.01	1.71	575.93
Zinc	mcg	0.78	0.91	0.13	17.05
Vitamins					
B ₁ (Tianin)	mg	0.03	0.22	0.19	752.94
B ₂ (Riboflavin)	mg	0.05	0.25	0.20	371.70
B ₆ (Pyridoxin)	mg	0.06	0.15	0.09	159.32
B ₉ (Folic acid)	mcg	4.18	10.26	6.09	145.75
PP (Niacin)	mg	0.17	0.61	0.44	269.09
E (Tocopherol)	mg	0.47	1.50	1.03	221.51
Asorbinova acid	mg	4.00	24.70	20.70	517.50

Based on the results of the study of the chemical composition of apple mousse based on Greek yogurt, monk fruit and acai puree, it can be concluded that when adding plant substitutes, the content of the following indicators increases: protein – by 265.44%, dietary fiber – by 641.25%, and calorie content decreases by 63.89%. Vitamin content varies as follows: B₁ increases by 752.94%, B₂ – by 371.70%; PP – by 269.09%, E – by 221.51% and C – by 517.50%.

Of the minerals in the test sample, calcium – increased significantly by 91.24%, magnesium – by 92.72%, sodium – by 225.98% and iron – by 575.93%. Therefore, replacing sugar with monk fruit and cream – with Greek yogurt reduces the energy value of the mousse dessert, and partially replacing

applesauce with acai puree improves the vitamin and mineral composition of the dish.

CONCLUSIONS

Based on the results of research on the properties of plant raw materials and their influence on the choice of technological modes of production of mousse desserts, a technology has been developed that ensures the production of high-quality mousse desserts.

Based on experimental data on the chemical composition of plant raw materials, its influence on the organoleptic properties of mousse desserts was determined, and the improvement of their nutritional and biological value was substantiated. Rational amounts of its addition in the production of the specified sweet dishes have been established.

On the basis of the conducted research, technologies and recipes for the production of mousse desserts using Greek yogurt, monk fruit and acai puree have been developed. It was established that desserts obtained using new technologies have high organoleptic and physico-chemical quality indicators.

The use in the production of mousse desserts of Greek yogurt, monk fruit and acai puree contributes to the expansion of the range of functional dishes and thereby improving the general state of health of the population.

SUMMARY

Desserts are popular among the population of all countries of the world. But their disadvantage is that they contain a small amount of biologically active substances and have a high energy value. One of the promising directions for the development of modern sweet products is to improve the micronutrient composition and give it health-improving properties.

One of the trendy sweet dishes today is mousse, based on which pastries, cakes and desserts are prepared. Mousse desserts are delicate and airy treats that have a characteristic light, creamy texture, achieved by whipped cream, egg whites or other foaming ingredients, as well as thickeners such as gelatin or agar-agar.

A classic mousse dessert is apple mousse, which is used as an independent dish or as a layer in cakes and pastries. The recipe ingredients are applesauce, sugar, gelatin, water, vanilla.

The technology of new mousse desserts has been developed:

- apple mousse based on Greek yogurt, monk fruit and acai puree;
- apple mousse based on Greek yogurt, monk fruit and blueberry puree;
- apple mousse based on Greek yogurt, monk fruit and currant puree.

Based on the results of the study of the chemical composition of apple mousse based on Greek yogurt, monk fruit and acai puree, it can be concluded that when adding plant substitutes, the content of the following indicators increases: protein – by 265.44%, dietary fiber – by 641.25%, and calorie content decreases by 63.89%. Vitamin content varies as follows: B₁ increases by 752.94%, B₂ – by 371.70%; PP – by 269.09%, E – by 221.51% and C – by 517.50%.

Of the minerals in the test sample, calcium – increased significantly by 91.24%, magnesium – by 92.72%, sodium – by 225.98% and iron – by 575.93%. Therefore, replacing sugar with monk fruit and cream – with Greek yogurt reduces the energy value of the mousse dessert, and partially replacing applesauce with acai puree improves the vitamin and mineral composition of the dish.

The developed mousse desserts are recommended for introduction in restaurants and craft production, as dishes of reduced energy and increased food and biological value.

Bibliography

1. Healthy food is available to each of us. URL: <https://surl.li/yazqii/>.
2. Modern trends in the production and consumption of sweet dishes. URL: <https://surl.li/djqavj>.
3. Технологія продукції ресторанного господарства [Текст] : підручник / А. Д. Салавеліс, С. Л. Колесніченко, Ю. О. Козонова, С. О. Поплавська. Одеса : Освіта України, 2017. 312 с.
4. Mousse desserts – what are and how to cook. URL: <https://surl.li/vpnfzm>.
5. Mousse cakes and desserts in Kyiv establishments. URL: <https://surl.li/ztdxoq>.
6. Dessert preparation technology. URL: <https://surl.li/awweve>.
7. Apple mousse. URL: <https://surl.li/rsreip>.
8. Міквабішвілі І., Гніцевич А. Технологія мусу на основі плодово-овочевої композиційної суміші. URL: <https://surl.li/pcjrtd>.
9. Хомич Г. П., Горобець О. М., Наконечна Ю. Г., Чоні І. В., Тесленко Н. В. Використання пектиновмісної сировини в технології десертних виробів. *Науковий вісник Полтавського університету економіки і торгівлі. Серія «Технічні науки»*. 2023. № 2. С. 18–25. DOI: <https://doi.org/10.37734/2518-7171-2022-2-3>.
10. Дзюба Н. А. Композиційне проєктування полікомпонентних мусів біопротекторної дії. *Вчені записки Таврійського національного університету ім. В. І. Вернадського. Серія: Технічні науки*. 2019. Том 30 (69). № 5. Частина 2. С. 86–92.

11. Грабовська О. В., Березова Г. Дослідження драглеутворювальної основи мусових десертів. URL: <https://surl.lu/qaznss>.
12. Рубанка К., Терлецька В., Писарець О., Братусь Ю. Дослідження структурно-механічних властивостей збивних солодких страв на основі чаю. URL: <https://surl.li/lbmprf>.
13. Михайличенко А. В., Фурманова Ю. П. Муси на основі рослинного молока без цукру як альтернативна безлактозна продукція для закладів ресторанного господарства. *Проблеми формування здорового способу життя у молоді*. Одеса : ОНАХТ, 2019. С. 151–153.
14. Кравчук Н. М., Польовик В. В., Клец Д. О. Вдосконалення технології десертів. URL: http://nbuv.gov.ua/UJRN/molv_2018_11%282%29__125.
15. Янчук А. Д., Чоні І. В. Перспективи використання рослинної сировини у складі десертної продукції. Редакційна колегія. Полтава. 2019. 289 с.
16. Monk Fruit. URL: <https://surl.li/uafsyk>.
17. What are acai berries and why should they be consumed. URL: <https://surl.li/tdfwss>.
18. Greek yogurt. URL: <https://surl.li/ybwogi>.

Information about the authors:

Medvedieva Anzhelika Oleksandrivna,

Candidate of Technical Sciences,
Associate Professor at the Department of Technology
and the Organization of restaurant business
State University of Trade and Economics
19 Kyoto Street, Kyiv, Ukraine

Antoniuk Iryna Yuriyivna,

Candidate of Technical Sciences,
Associate Professor at the Department of Technology
and the Organization of restaurant business
State University of Trade and Economics
19 Kyoto Street, Kyiv, Ukraine