

THEORETICAL ASPECTS OF IMPROVING THE TECHNOLOGY OF LOW-CALORIE ICE CREAM

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A very important topic today is the psychological and physical health of people, especially the younger generation.

Overweight and diabetes in children are one of the most common problems in modern medicine and nutrition. Obesity affects all human systems and organs, and can cause more than 200 diseases, including hypertension, diabetes, musculoskeletal disorders, some cancers and others.

In Ukraine, according to official statistics in 2017, the prevalence of obesity among children under 17 is over 13.4%, and the country annually records an average of 15.5 thousand new cases.

The World Health Assembly has adopted the WHO Global Strategy on Diet, Physical Activity and Health. It calls for action at the global, regional and local levels to improve children's nutrition and physical activity.

To improve the situation with obesity in children in Ukraine, new norms of physiological needs of the population in basic nutrients and energy were developed and adopted, documented in the Order of the Ministry of Health "On approval of norms of physiological needs of the population of Ukraine in basic nutrients and energy".

This document came into force on December 7, 2017. To date, official sources do not contain up-to-date data on obesity prevalence statistics in Ukraine, so it is unfortunately not possible to evaluate the results of the innovations reflected in this order.

There is no clear policy of healthy eating in Ukraine. To solve this problem, it is worth paying attention to the improvement of existing technologies and the development of new types of low-calorie foods, including for children with special nutritional needs.

Health is a dominant theme, influencing the improvement of new products and the development of innovations in the ice cream industry, which is based on the reduction of fat, synthetic ingredients and sugar.

Ice cream is a dessert with high sugar and fat content. They are the main carriers of calories in this product.

The main caloric component in milk ice cream recipes is fat - milk and / or vegetable. And the easiest way to reduce the caloric content of frozen dessert can be to reduce the amount of this component. According to current regulations, ice cream depending on the fat content is classified: dairy - with a fat content of 0.5 to 7.5%, cream - with a fat content of 8.0 to 11.5%, ice cream - with a fat content of 12.0 to 20.0%. These types of ice cream in a wide range are presented on the market of Ukraine and the consumer has a free choice to choose a product with the desired fat content.

However, as the fat content decreases, ice cream exhibits texture defects such as roughness, iciness, brittleness and are more prone to deformation during storage. The described disadvantages can be avoided by using additional functional and technological ingredients or fat substitutes that can mimic at least to some extent the properties of fat.

An alternative approach is to use specialized fat substitutes that have been developed to meet certain properties of fat. These ingredients are divided into two categories: substances of a lipid nature (containing fatty acyl groups) and non-lipid substances based on proteins or carbohydrates.

Because fat plays a key role in stabilizing the air phase, simply replacing fat with sugars can have a detrimental effect on product quality during storage and sale, leading to impaired resistance to melting, shrinkage of the product and, as a result, coarse consistency. In addition, replacing fat with carbohydrates will not solve the problem of high-calorie product.

Non-lipid fat substitutes in ice cream include whey protein and inulin. For example, British scientists have described the process of using whey protein as a substitute for milk fat. Thus, the level of fat (dairy and vegetable) can be reduced to zero without losing the quality of the product.

The use of whey products by world manufacturers in frozen dairy desserts is becoming more common. Whey and whey products can offer significant benefits of functionality, cost-effectiveness to avoid or reduce costs, improve the quality of finished products, excellent nutritional value and other nutritional benefits.

Since ice cream is a dessert product, significant attention should be paid to the glycemic index. This indicator reflects the speed at which a food is digested in the human body and converted into glucose - the main source of energy. The glycemic index of glucose as a reference is 100.

The use of polyols as an alternative to sugar in the composition of ice cream of various kinds will expand the range of products with low calorie and glycemic content. The pronounced cryoprotective ability of these compounds can be used to regulate the consistency of ice cream, and the unique taste properties will improve the organoleptic perception of sweetness and aroma of the finished product.

The complex combination of sugar substitutes taking into account their chemical composition and technological properties will allow to purposefully regulate the physico-chemical characteristics of mixtures for its production of ice cream.

Therefore, given the above, it is appropriate and relevant to study the possibility and conditions of application of these sugar substitutes as promising technological and functional prescription components in the production of ice cream.

No less important is the restriction for the marketing component in the sale of high-fat and high-carbohydrate products for children, including ice cream. This applies to strict control over the placement and content of advertising, which is primarily aimed at children. This practice is already successfully used by the world-famous corporation Unilever. The company says it will not advertise on television or other media, where children under the age of 12 make up more than 25 percent of the audience, and will not advertise ice cream products in schools or children's movies. In addition, Unilever has stated that it will not hire celebrities or influential people on social networks or use licensed cartoon characters in marketing, which will appeal mainly to children under 12 years.

Therefore, given the above, it is advisable and relevant to study the possibility and conditions of application of technological and functional prescription components - substitutes for sugar, fat and other non-synthetic substances in ice cream, as well as review and clear control over the conditions of promotion and implementation of this dessert.

References:

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