http://www.moderntechno.de/index.php/meit/article/view/meit36-00-057
DOI: 10.30890/2567-5273.2024-36-00-057

УДК 619: 614.31: 637

MODERN TRENDS IN THE REGION DEVELOPMENT OF FUNCTIONAL MEAT PRODUCTS

СУЧАСНІ НАПРЯМКИ В ОБЛАСТІ РОЗРОБКИ ФУНКЦІОНАЛЬНИХ М'ЯСНИХ ПРОДУКТІВ

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Анотація. *The article assesses the prospects for the creation of functional meat products, and examines the main directions for the development of this category of food products. It is concluded that the creation of functional meat products is a promising direction for the development of the healthy food market.*

Key words*: meat products, functional properties, market segment, folic acid nutrition.*

The development of new generation functional food products is an innovative direction in the food industry, which has extremely important practical significance and social efficiency. At present, the production of functional products is gradually increasing in Ukraine. More and more products are being produced, enriched with vitamins, microelements and other substances necessary for human health.

Today, four groups of functional products are actively developing in the world: soft drinks, grain-based, dairy-based and fat-based products. The functional meat products market segment is underdeveloped, which is explained by the peculiarities of their production technology.

Meat and meat products are one of the most complex bases for creating functional foods, although from the point of view of healthy nutrition, meat is one of the most important food products. In the diet, meat is the main source of complete animal proteins, vitamins and minerals, in particular iron, zinc, phosphorus, vitamin B12 and folic acid.

Currently, there are three main directions for creating functional meat products: 1. changing the characteristics of meat intended for use as raw material through targeted selection or technological and technical measures during the growth of animals; 2. reducing the "negative" components included in the meat (in particular, reducing the mass fraction of fat, table salt); 3. enriching the product with nutrients during its production.

The first direction is less common and involves obtaining raw materials with a given component composition. For example, lifetime modification of the fatty acid composition of meat in order to increase the content of unsaturated fatty acids. In this case, the modification involves long-term feeding of animals with feed enriched with a vegetable fat component, in particular soybean meal, vegetable oils with a high

content of polyunsaturated fatty acids.

Another example of modifying the properties of poultry, rabbits and cattle meat is feeding them raw materials enriched with selenium, α-tocopherol. The second direction involves the creation of low-fat meat products. Reducing the fat content in meat products is possible by including ballast substances or fat imitators in the recipes. The use of enzyme-modified starches, which also have resistant properties, is promising as fat substitutes. [6].

Another way is to change the fatty acid spectrum itself, introducing vegetable fats or microencapsulated fish oil. The third direction is the most common and is based on the modification of traditional products. Fortification of meat products involves the use of dietary fiber, vitamins, minerals, polyunsaturated fatty acids, prebiotics and probiotic cultures of microorganisms.

Modern technologies for creating functional products include the use of antioxidants, which have long been used to produce meat products to stabilize and enhance the red color of products, to slow down the rancidity of fats. Their functional role is that they protect the body from the harmful effects of free radicals and thus affect the pathogenesis of cancer and cardiovascular diseases.

There are a number of plant extracts with antioxidant action that have found application in meat product technology: extracts of rosemary, sage, black and green tea, etc. Research is currently underway on the use of lycopene. To obtain a bright, intense color for finished products, such raw materials are isolated with a gelatin block and used as inclusions to create a pattern on the cut [2].

The use of prebiotics and dietary fiber is also promising for the creation of functional meat products. Prebiotics include substances that stimulate the growth and activity of specific "useful" bacteria in the large intestine. In most cases, they are part of the polysaccharide group (inulin, resistant starches, etc.). For example, inulin suspensions can also be used as fat substitutes. Depending on the recipe and flavor composition, inulin suspensions can be used in the production of meat products without significant loss of taste. [1].

Enrichment of meat products with the prebiotic lactulose makes them functional, that is, beneficial to human health. In addition to bifidogenic properties, lactulose has a number of other functional properties, such as antitumor protection of the intestine, stimulation of the body's general immunity, reduction of the pathogenic microflora population, etc.

The use of lactulose in the meat industry has found wide application in Belarus. For example, the Slonim meat-packing plant produces sausages containing lactulose, and the Slutsk plant produces dumplings containing lactulose. [4].

Along with prebiotics, insoluble dietary fiber (for example, wheat fiber and oat fiber) are also used.

The most promising is the introduction of purified dietary fiber preparations into products. The trend of introducing dietary fiber into meat products is still in the development stage in Ukraine, unlike the dairy and bakery industries. There is currently a huge selection of dietary fiber - cellulose - on the meat processing market. Due to insoluble ballast substances, the preparations have a positive effect on the system of chewing food, reducing blood sugar levels, generally improving the

digestion process, reducing cholesterol levels in the blood, and stimulating fermentation in the large intestine. Fiber preparations help bind and remove toxic substances.

Research is underway into the effectiveness of using pectin-containing raw materials in the production of meat products for functional and prophylactic purposes - cranberry and lingonberry pulp, cedar nut cake, rowan berry pomace, which are sources of physiologically active ingredients - dietary fiber, vitamins and minerals [3, 5].

Starter cultures have been used in the production of dry-cured sausages for many years. Along with technological properties, they also have a probiotic effect. In the production of dry-cured sausages, lactic acid bacteria, which are part of the starter cultures, play a very important role. As a result of their metabolism, the sugar substances contained in the mince are converted mostly into lactic acid, which has a positive effect on the taste of the product. Acid formation is also important for hygienic stability, including an increase in shelf life. Compacting the mince structure facilitates portion cutting of the sausage loaf.

In order for the probiotic properties of a product to be reliably declared, a certain number of live microorganisms must be preserved in sausages before they are consumed. Therefore, the vector direction of production of sausages with bacteria - probiotics is considered to be the category of products that do not undergo heat treatment - dry-cured sausages

One of the ways to correct the chemical composition of meat products is to use medicinal plants rich in biologically active substances in production. Enrichment of meat systems with plant additives that are diverse in biochemical composition, and, consequently, in nutritional and biological value, is advisable, first of all, from the point of view of increasing the functionality of new products.

In scientific literature there is data on the development of cutlet recipes using sea buckthorn and milk thistle, which have therapeutic and prophylactic properties [4].

Other scientists have studied the possibility and effectiveness of using medicinal plants such as purple echinacea and blue cyanosis, which have tonic, immunostimulating and anti-inflammatory properties in the technology of functional meat-vegetable semi-finished products [5].

To reduce the risk of cardiovascular diseases, a group of foreign scientists developed restructured meat products containing up to 20% walnuts. In such products, the ratio of ω-3-unsaturated and ω-6-unsaturated fatty acids, as well as the presence of γ-tocopherol and arginine-rich protein help prevent cardiovascular diseases [1].

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Анотація. *У статті оцінено перспективи створення функціональних м'ясних продуктів, розглянуто основні напрями розвитку даної категорії продуктів харчування. Зроблено висновок, що створення функціональних м'ясних продуктів є перспективним напрямком розвитку ринку здорового харчування.*

Ключові слова: *м'ясні продукти, функціональні властивості, сегмент ринку, фолієва кислота харчування.*