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USE OF NON-TRADITIONAL FOOD ADDITIVES IN THE PRODUCTION OF BAKERY PRODUCTS

Bakery products are the basic food stuffs of people containing nutrients necessary for a normal life, including proteins, lipids, carbohydrates, minerals, vitamins, dietary fibers. They are characterized by easy digestibility and good digestibility, high energy value, pleasant taste, retain their consumer properties for a longer time, much cheaper in comparison with other food products. Functional properties in bread baking technology are possessed by dietary bakery products, which are intended for preventive and therapeutic nutrition, and designed to replace traditional products not recommended for medical reasons for certain population groups. Currently, there is an extensive range of functional-bakery products produced in Kazakhstan. It includes various groups of products, depending on the availability and content of various functional ingredients in them. One of the possible ways to improve the structure of nutrition in the country's population is the use of non-traditional bread baking crops containing bakery products that contain a significant amount of easily digestible protein, vitamins and minerals in bakery production.

Keywords: dietary fiber, enterosorbent properties, bakery products, protein, vitamins, bacteria, antioxidants.

Introduction. At present, in all developed countries of the world, issues of healthy nutrition are elevated to the level of state policy. The problem of nutrition correction is also relevant for Kazakhstan. The Ministry of Health and Social Development in the field of consumer rights protection and human well-being directs to increase the production of fortified food supplements with mass consumption, incl. wheat flour of the highest and first grades, bakery products [1-5]. In the current socio-economic conditions of the Republic, the formation of a state policy in the field of healthy nutrition is not only an urgent but also a vital task, because nutrition, which is inadequate to the physiological needs of the organism, can present a potential threat to the national security of the country today [6-9]. Human health and the nation as a whole are largely determined by the diet. Optimum nutrition is a key factor that determines the active work capacity, life expectancy and preservation of the nation's gene pool. Bakery products occupy a special position in the diet of the population of Kazakhstan. These products are included in the daily diet of the vast majority of consumers, being one of the main sources of energy and nutrients. Products made according to the traditional recipe, provides for human needs in proteins by 25-30%, in carbohydrates - by 30-40%, in vitamins, minerals and dietary fiber - by 20-25%, and therefore, food and biological value these products should be given special attention [10-12]. Today, seven basic groups of functional ingredients are effectively used: dietary fiber, vitamins (C, D, gr.V.), minerals (Ca, Fe), lipids containing polyunsaturated fatty acids, β -carotene antioxidants, tocopherols, oligosaccharides and some useful microorganisms, lactic acid bacteria. The priority task facing the bakery industry is currently to expand the range of bread and improve its quality through the use of traditional and non-traditional raw materials, as well as biologically active additives in order to ensure the rational nutrition of the population. Bread is a product of everyday and mass demand, so enriching its dietary supplements and additional raw materials, rich in biologically active substances, should play an important role in the prevention of many diseases. Providing the population with high-grade protein products is one of the most important problems, since there is a strict interrelation between health and consumed protein. Therefore, research is being conducted on the search for a rational type of raw materials, technological regimes and the development of new types of bakery products for preventive purposes. In this regard, in order to expand the range, increase the nutritional value and improve the quality of bakery products, a technology was developed for the production of bread with the addition of a food additive from vegetable origin, processed rice husk, which has an adsorbent property, macro and micro elements, vitamins, minerals and other Essential components in the technology of bakery products.

Methodology and methods of research. The methodological basis of the study is a systematic analysis of the technology of production of bakery products enriched with promising specialized bioadditives from plant raw materials. In accordance with the chosen methodology, the problem of choosing and justifying the use of bioadditives in the recipe of bakery products, as well as improving the formulation of bakery products using perspective herbal bioadditives, is solved. The object of research is bakery products of high nutritional value with the use of perspective herbal bioadditives, their technology and recipes. The subject of the study is the effect of a specialized dietary supplements made from rice husks of plant origin on the quality and nutritional value of finished bakery products.

The discussion of the results. The main violations in the field of nutrition - inadequate intake of animal fats, inadequate intake of dietary fiber, as well as most minerals, vitamins. That is why considerable attention is paid to the development of new types of food products with the use of unconventional plant raw materials, rich in useful substances, the necessary human body. Taking into account the historically developed high share of the grain group in the consumer basket of the population of Kazakhstan, research in the field of designing prescription compounds and technologies of new kinds of bakery products, including those enriched with physiologically functional ingredients, is of great importance.

In the production of food, it is important to choose the right raw materials, economically justify the way it is processed. It must be affordable, cheap and technological. The use of local raw materials reduces the cost of production. Given these factors, as well as the possibility of expanding rice crops, it became necessary to study the directions of its use for food purposes, namely in the production of bakery products.

Recently, a growing number of diseases associated with adverse environmental effects. It is for this reason that substances such as hepatoprotectors are widely used, which provide protection for the liver and other organs from damage of various kinds. Vitamins are exogenous factors. The human body is not able to synthesize vitamins and gets them with food. They are necessary for the normal course of biochemical processes in the body. Insufficient intake of vitamins into the body and, as a consequence, the development of a specific symptomatic complex in the form of hypo- and avitaminosis are accompanied by metabolic disturbances. The use of vitamins and minerals in combination with food (bread) in an optimally selected ratio helps to increase their bioavailability and digestibility. Vitamins of group B (B1, B2) and PP regulate the functional state of the central nervous system, metabolism, increase the body's resistance to infections [13-21].

As a potentially beneficial for the human body additives of vegetable origin, the choice of rice husks is due to the fact that the composition of this raw material includes cellulose, lignin and macro and micro elements. Rice-peel raw material refers to rapidly renewable sources and is environmentally friendly. Distinctive features of the proposed invention are: hydrolysis of the rice husk is carried out with 5% nitric acid at a ratio of rice husk: 5% nitric acid = 1: (3-7); boiling for 2-3 hours; washing to pH = 7. The use of 5% nitric acid for hydrolysis is due to availability, safety. When using 1-4% nitric acid - low physicochemical parameters (sorption capacity, specific surface area).

At a ratio of rice husk: 5% nitric acid is less than 1: 3 - low physicochemical parameters (sorption ability, specific surface area); the ratio of rice husk: 5% nitric acid is higher than 1: 7 - the washing time is increased, thus increasing the cost of using water and electricity. Boiling is carried out for 2-3 hours in order to achieve high efficiency and activation of the interaction of the components of the composition. Boiling less than 2 hours does not allow to obtain a ballast composite of organic PV with high physical and chemical properties, boiling for more than 3 hours destroys the structure of the ballast composite of organic food fibers, pH is adjusted to 7 to neutralize the ballast composite of organic food fibers. The method of preparation is carried out according to a certain scheme: 350 g of sifted, washed and dried rice husks are poured into 5% nitric acid in the ratio 1: (3-7) - rice husks and nitric acid in the total mass, placed in a 3 liter measuring beaker, stir with a

glass rod, leave the solution for 14 hours. The resulting composition is boiled at 75-85 ° C for 3 hours, cooled to room temperature, washed and neutralized with distilled water to pH = 7. The resulting ballast composite of organic food fibers is dried and ground. After the dough is made from wheat flour of the highest grade in the amount of 112 g, add quick-cooking yeast 6 g, salt 2 g, drinking water. Its fermentation, cutting, basting of test billets and their baking, during kneading of the dough, a prepared ballast composite of dietary fibers from rice husk in the amount of 7.0-10.0% by weight of a mixture of wheat flour of superior quality and a ballast composite of organic food fibers, particle size crushed ballast composite of dietary fiber not more than 1 mm.

Processed rice husk is rich in dietary fiber, it is necessary to strengthen digestion, it includes a rich mineral complex composition. The introduction of dietary fiber into bakery products can reduce the energy value of the product and is economically feasible, as this reduces its cost. Dietary fibers have specific physiological properties. They stimulate the work of the intestines, adsorb toxins; intensify lipid metabolism; prevent the absorption of cholesterol in the blood, normalize the composition of the intestinal microflora. Food fibers include: • fiber, hemicellulose, pectin substances, • lignin. Fiber actively affects the secretory activity of digestion and enhances the peristalsis of the small and large intestine. Excessive consumption of fiber can lead to incomplete digestion of food and impaired absorption of micronutrients and vitamins into the bloodstream.

The most important property of pectin substances is their complexing ability. Molecules of pectin interact with ions of heavy metals and remove them from the body. Lignin is a non-carbohydrate substance of the cell membrane, consisting of aromatic alcohols. Lignins bind bile acids and other organic substances, slow down the adsorption of dietary fiber in the intestine.

Thus, one of the promising technologies contributing to significant intensification of production processes and opening up great opportunities for expanding the assortment of bakery products is the technology of enriching products with biologically active substances. Application in the production of baked rice hulls will allow to expand the assortment, as in the bread there is a high content of protein, fiber, lignin, improved flavor and therapeutic and preventive qualities. The learned new sort of bread has an increased nutritional value, therapeutic and preventive properties. Bakery products using rice husks in terms of basic quality characteristics are not inferior to ordinary bread, and for certain points of acidity, porosity, shape stability has better indicators. In this case, it has adsorbing properties that provide removal of heavy metals from the human body, radionuclides, promotes the prevention of dysbacteriosis and normalization of the intestinal microflora. In addition, the quality of bread is enhanced by reducing the toxicity of the product when using flour contaminated with pesticide residues.

Conclusions:

1. The effectiveness of introducing in the formulation of bakery products the increased nutritional value of plant raw materials (rice husk) containing in the body the physiologically functional ingredients necessary for the body is scientifically proved;
2. The rational dosages of herbal ingredients are determined when creating new recipes for bakery products;
3. The positive influence of rice hull on the structural and mechanical properties of the dough, as well as the quality, nutritional value, consumer properties of bread, and the timing of the preservation of freshness of finished products have been revealed.

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НАН-ТОҚАШ ӨНІМДЕРІН ӨНДІРУДЕ ДӘСТҮРЛІ ЕМЕС ТАҒАМДЫҚ ҚОСПАЛАРДЫ ПАЙДАЛАНУ

Түйін: нан-тоқаш өнімдері адамдардың негізгі азық-түлігі құрамында қоректік заттар бар тағамдық талшықтарды қоса алғанда, ақуыздар, липидтер, көмірсулар, минералдар, дәрумендер қалыпты өмір үшін қажетті болып табылады. Олар басқа да азық-түліктермен салыстырғанда жеңіл және жақсы сіңірілуімен, жоғары энергетикалық құндылығы бар, жағымды дәмімен, өзінің тұтыну қасиеттерін ұзақ уақыт бойы сақтаумен әлдеқайда арзан болып сипатталады. Диеталық нан-тоқаш өнімдеріне нан пісіру технологиясының функционалдық қасиеттері жатады, яғни дәстүрлі өнімдерді алмастыруда профилактикалық және емдік тамақтануға ауыстыру үшін арнайыландырып тағайындалуы бойынша халықтың белгілі бір топтары үшін медициналық көрсеткіштер ұсынылмаған. Қазіргі уақытта Қазақстанда арнайыландырылған-наубайханалық өнімдер кеңінен таралған. Құрамында әр түрлі арнайыландырылған ингредиенттер болуымен байланысты құрамының және тобының әр түрлі өнімдерге бай болуын қамтиды. Өндірісте нан-тоқаш өнімдерінің құрамын жақсартудың ықтимал жолдарының бірі, халықтың тамақтануында дәстүрлі емес нан пісіруде, дәрумендер мен минералдардың құрамында едәуір оңай сіңіретін ақуыздар, түрлі дақылдар бар нан-тоқаш өнімдерін пайдалану болып табылады.

Түйінді сөздер: диеталық талшық, энтеросорбентті қасиеттері, нан-тоқаш өнімдері, ақуыздар, дәрумендер, бактериялар, антиоксиданттар.

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ИСПОЛЬЗОВАНИЕ НЕТРАДИЦИОННЫХ ПИЩЕВЫХ ДОБАВОК В ПРОИЗВОДСТВЕ ХЛЕБОБУЛОЧНЫХ ПРОДУКТОВ

Резюме: Хлебобулочные изделия являются основными продуктами питания людей, содержащих питательные вещества, необходимые для нормальной жизни, включая белки, липиды, углеводы, минералы, витамины, пищевые волокна. Они характеризуются легкой усвояемостью и хорошей усвояемостью, высокой энергетической ценностью, приятным вкусом, сохраняют свои потребительские свойства в течение более длительного времени, намного дешевле по сравнению с другими продуктами питания. Функциональные свойства в хлебопекарной технологии имеют диетические хлебобулочные изделия, предназначенные для профилактического и терапевтического питания. В настоящее время в Казахстане существует широкий спектр функционально-пекарных продуктов. Он включает различные группы продуктов, в зависимости от наличия и содержания различных функциональных ингредиентов. Один из наиболее возможных путей улучшения структуры питания в хлебопекарной продукции. Хлебобулочные изделия, содержащие хлебобулочные изделия, содержащие значительное количество легко усваиваемого белка, витаминов и минералов в производстве хлебобулочных изделий.

Ключевые слова: диетическое волокно, энтеросорбентные свойства, хлебобулочные изделия, белки, витамины, бактерии, антиоксиданты