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**DEVELOPMENT OF TECHNOLOGY FOR THE PRODUCTION OF BREAD USING
ADDITIVES FROM VEGETABLE RAW MATERIALS**

Abstract

Already in antiquity, grapes derivatives from it were valued not only for taste, but also for medicinal properties. Modern scientific medicine confirms that berries contain a large amount of antioxidants that protect the body from chronic diseases of the cardiovascular system, nervous system, and also help fight free radicals. Even a high sugar content does not spoil the berry, as it

contains some substances that improve the absorption of glucose. bread is the most popular food product, so the introduction of healthy ingredients into its composition can have a significant impact on human health. One of the most important sources of food powders, which include up to 20% fiber and 5-8% pectin, is grapes (explosives). Recently, one of the solutions to this development of the bakery industry is to improve its quality and nutritional value, in terms of sustainable nutrition is the development and introduction of bread with high consumption characteristics and low energy value. The problem of healthy eating is relevant for food producers in many countries around the world. In Kazakhstan, bread is considered as one of the staple foods, so the priority development of the baking industry is to improve its quality and nutritional value. Recently, one of the solutions of this problem from the point of view of rational nutrition is development and implementation of bread, characterized by high consumer characteristics and low energy value. In addition to their environmental friendliness implies the presence of dietary and therapeutic and preventive properties.

To conduct scientific research, experiments:

- To study the effect of vegetable raw material additives on the baking properties of wheat flour and quality indicators of wheat dough
- Study the effect of vegetable additives on the quality properties of wheat dough and consumer properties of bread

The scientific novelty of this work is to obtain bread, using the addition of vegetable raw materials, which have a positive impact on enhancing the nutritional and energy values of the product. Obtained by experimental research technology of bread production with the use of additives from plant raw materials will be important for the human body. Getting a new type of bread with increased nutritional and biological value due to the addition of herbal raw materials. The use of vegetable raw materials in the production of new types of bread with increased nutritional and biological value expands the range of this type of product, enriches the human body with beneficial micronutrients, increases the nutritional value and extends the shelf life.

Key words: *wheat bread; grape seed; micronutrients; vitamins; raw materials; additives; bio-value; nutritional and medicinal value.*

Introduction

In Kazakhstan, bread is considered as one of the basic foodstuffs, due to its priority development in the bakery branch. Recently, one of the solutions to this problem from the point of view of healthy nutrition is the development and introduction of bread, distinguished by higher consumption features and low energy value. In addition to their environmental friendliness implies the presence of dietary and therapeutic properties. The purpose of this study was to study the effect of plant additives, namely grape seeds, on the quality of the main raw material used in the manufacture of bread, as well as without yeast, instead we use grape juice fermentation. To improve the nutritional value of bread and to create products, suitable for therapeutic and prophylactic nutrition, recently . Sprouted grain bread is particularly popular, as it preserves all the vitamins and a large part of the protein and mineral content of the grain. Preserved all the vitamins, as well as a significant portion of proteins and minerals inherent in the nature of the grain. One way to solve this problem can be the use of additives of local non-traditional raw materials, in particular products of processing berries and fruits and grapes in the form of powder. An important advantage of natural products is the complexity of their chemical composition, the possibility to enrich bakery products with vitamins, proteins and minerals simultaneously. [1,2,8].

There is a clear relationship between the spread of many diseases of asthma, gastrointestinal tract and disrupted nutritional structure. Hence, one of the most important measures for disease prevention is the need to develop new everyday foods, including bakery and pastry products, additionally enriched with essential nutrients to the level corresponding to the physiological needs of the human body. One of the ways to increase the nutritional and biological value of bakery and flour confectionery products is the use of local plant resources. Given the wide distribution of grapes in the territory of Shymkent, Arys, Zhambyl, outskirts of Almaty and Taldykorgan, where

the area of this culture is 100-150 ha, and annually possible volume of grape harvesting is 10-20 tons, the use of processed grape products, including powders, for production of bakery and flour confectionery products of preventive purposes is perspective and actual. The problem of increasing the nutritional value of bakery products, including additives derived from grapes, is reflected in the work of many scientists. L.Ya. Auerman, R.D. Polyandeova, S.A. Korachka V.D. Malka, T. Bdzganova, A. Zhaboye, VS Kolodeyazina, NG Shcheglov, A. Musaeva, TB Pershchekova, D.V. Kondratiev and others.

The aim and the main objectives of the research.

The aim of the work is to develop the technology of production of wheat bread with the use of additives from vegetable raw materials.

In accordance with the goal the following tasks were solved:

- To study the effect of additives from vegetable raw materials on the baking properties of wheat flour and quality indicators of wheat dough;
- To study the effect of additives of vegetable raw materials flour on the quality of bread;
- improve the quality of the finished products by organoleptic indices due to the introduction of grape seeds in the form of powder
- to develop the production technology and the recipe for bread with the use of additives from plant raw materials
- economically justify the developed technological solutions.

A main part

Currently, the production of non-waste products and processing of products is one of the most pressing problems in Kazakhstan. To improve the range of bakery products need to focus on changes in the needs of the population in order to more fully meet them.

It is necessary to orient the scientific, production of Kazakhstan bakery to solve urgent problems in the following directions:

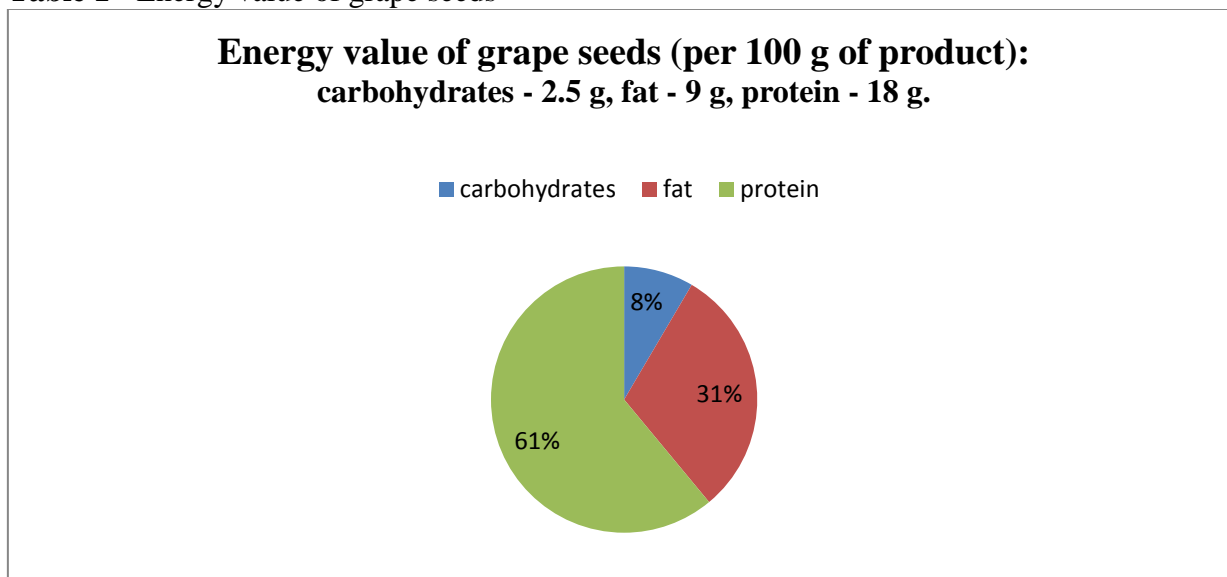
- Introduction of resource-saving technologies
- Introduction of a range of bakery products, taking into account professional and environmental peculiarities of the regions; If you take grape juice for systematic treatment and prevention, you can in this way speed up the process of hematopoiesis, cleanse the liver of toxins and improve blood composition. Considering these reasons, I used grape juice and grape seeds. Because many vitamins, especially rich composition of trace elements - potassium, magnesium, etc. in the grape juice and seeds. Influence of grape products on the nutritional and biological value of bakery products. One of the most important directions of increasing the nutritional and biological value of bakery and flour confectionery products is the use of various kinds of food additives that contribute to the prevention of a number of diseases. It is known that wheat flour products contain insufficient proteins, minerals, dietary fiber, vitamins. In this regard, investigated the effect of processed grape products on changes in the chemical composition of bakery products. [4;5,6].

Experimental methods

As promising ingredients for creation of active food products practical attention is supposed products of processing of non-traditional plant raw materials - grape seeds. Introduction of natural vegetative resources, as a source of raw materials, magnificent essential micronutrients, will allow to expand assortment of let out bread production and to make than any other its chemical structure. Partial replacement of flour and sugar with grape seed powders leads to the enrichment of products with organic acids missing in the control samples. In this case, the daily requirement for them is covered at the consumption of 100 g of bakery products, biscuit and shortbread dough products by 10.5-17.5%, 13.5-23.0% and 29.5-35.5%, respectively. In the experimental samples the mass fraction of digestible carbohydrates decreases due to lower content in powders compared to flour, which leads to a decrease in the energy value of the finished products.

Grape seeds have a low nutritional value. In 100 grams of product is in the range 62-65 calories is shown in the table-1 below. [9;10].

Table 1 - Energy value of grape seeds



Grape seeds in their own composition contain a set of chemical compounds that are not typical of any 1-th food product. The product also contains minerals: Vitamin E (tocopherol, 0.19 mg), vitamin A (beta-carotene, 0.01 mg), B vitamins (riboflavin, thiamin, choline, folic acid, pantothenic acid, 25 mg), vitamin C (ascorbic acid, 10.8 mg), vitamin PP (nicotinic acid, 0.19 mg), phosphorus (20 mg), calcium (10 mg), sodium (2 mg), magnesium (0.7 mg), potassium (0.19 mg). Grape seeds include and all kinds of tannins, protein, unsaturated and saturated fatty acids, phytosterols, flavonoids, amino acids and almost all other necessary substances. As mentioned above, grapes are not considered a vitamin bomb, but its nutrients still make a valuable contribution to the body. For example, copper participates in energy production and together with vitamin C is responsible for collagen production. Potassium, in turn, is important for metabolism. Various trace elements (calcium, magnesium, phosphorus, manganese) Vitamin K helps to strengthen bones. By the way, 100 g of berries provide 28% of the daily value of vitamin K, which is necessary for the body not only for bone health, but also for normal blood clotting. In addition, berries contain small doses of beta-carotene, lycopene, lutein, etc. Thus, as a result of the study the feasibility of using processed grape products to improve the nutritional value and enrichment of products with biologically active substances has been shown. Wheat flour may be enriched with vitamins and mineral substances according to the norms approved by Kazakhstan, as well as baking improvers, including dry gluten in accordance with the approved normative document. The name of such flour shall be accordingly added: "vitaminized", "enriched with minerals", "enriched with vitamin and mineral mixture", "enriched with and other baking improvers. In the flour enriched with vitamins a slight smell is allowed, characteristic of vitamin B1 (thiamine) [3].

Results and discussion

Grapes are often the subject of scientific research. Scientists focus mainly on its anti-cancer properties. It is believed that antioxidants are found mainly in the skin. Berry seeds as an effective preventive measure as an adjunct to cancer therapy if the disease has already developed. For example, resveratrol has been shown to help lower levels of oxidative stress, thereby protecting the rectum, breast, prostate and lung cancer. Another experiment showed that cells infected with colorectal cancer are vulnerable to proanthocyanidins, isolated from grape seeds. There are also several scientific articles confirming the effectiveness of various components of grape berries in the fight against breast cancer. Scientists claim that grape seed products may have important effects on cell motility in mice with breast cancer.

The aim of this work is to develop a bread production technology using vegetable raw material additives. In the Department of Technology and Bioresources at KAZNARU in the city of Almaty we conducted experiments to study the effect of grape seeds and grape juice on the quality

indicators of wheat bread. We took the grapes according to the relevant documents further peeled, separated the seed from the grapes. Then the grapes were left in a warm place for 4-5 days, and the seed dried then crushed

Table 2 - recipe for confectionary products with raw materials

Composition	Quantity
flour	30gr
eggs	1
vegetable oil	100ml
salt	1 tablespoon
sugar	1tablespoon
grape juice	100 ml
Grape seeds	5gr
sesame	as you wish

Measure the flour, add the eggs, baking powder, salt, and stir for 1 min. We prepare by mixing grape juice and vegetable oil in another bowl and grape seeds. We knead the dough by mixing our dry and liquid substances. The dough should be soft, greasy and not stick to the hands. Sesame as desired to cover the surface of the dough and pressed with a pad. This affects the taste of cookies. Put 200 C in the oven for 15-20 minutes.

Table 3 - Organoleptic characteristics of white bread quality from wheat flour of the highest grade (ГОСТ Р 58233-2018) [6;7].

Name of the indicator	feature
appearance : form	Corresponding to the bread form in which the baking was done without the side peaks
surface :	smooth without major cracks and undermining
color :	with a purple tint
crumb condition:	Baked , not damp to the touch. Elastic. After light pressure with the fingers the crumb returns to its original shape
PORITY:	well-developed with no hollows or voids. No peeling of the crust from the crumb
Milling :	no lumps or evidence of kneading
Taste :	undisturbed
Smell :	without offensive smell



Figure 1 - Finished products in sectional view

The results of the study of the chemical composition of grapes confirmed the feasibility of their use in the manufacture of bakery and flour confectionery products due to their high content of sugars, vitamins, minerals, fiber and vegetable proteins.

The effect of grape products on the baking properties of flour was studied by changing the gas-forming capacity, quantity and quality of gluten and acid accumulation. The dough was prepared by adding grape juice and grape seeds in an amount of 5, 10 % of flour weight. A dough sample without additives served as a control sample. We used baking wheat flour of higher grade and pressed baking yeast.

Conclusion

Thus, it is possible to conclude that the herbal additives introduced into the recipe of bakery products in the production of new types of bread with an increased nutritional and biological value expands the range of this type of product, are considered as an additional source of vitamins and minerals, causing the increase of their nutritional value. The impact of food additives on the fermentation process of semi-finished products, in particular on acidity accumulation, gas-forming capacity and gas-holding capacity, rheological properties of gluten, as well as on the quality and shelf life of bread are investigated and suitable characteristics are attributed. The research we have conducted makes it possible to implement the task of improving the technology of therapeutic and prophylactic bread.

For consumers in Kazakhstan, expansion of the therapeutic range is considered necessary, as British scientists recently observed elderly people who had problems with memory. It turned out that after introducing a glass of grape juice into their daily diet, their brain performance improved significantly. Another study showed that this berry improves learning talent because it activates blood flow to brain cells by almost 200 per cent. cell rebirth and the development of cancer. And as a result we want to add grape juice and grape seeds to the bread, without using yeast or water. As a result of the study it was found that the best indicators of structural and mechanical properties of yeast dough will be provided by the addition of grape juice in a dosage of 5% instead of flour, and powder from seeds -7%. Thus, the moderate use of grapes definitely brings benefit to the body. Dark berries enhance antioxidant protection, support cardiovascular vascular, digestive nervous system, protect against the development of chronic diseases . They also provide activation of skin regeneration processes.

In the course of this dissertation the following conclusions were made:

- The energy value of bread is determined by the peculiarities of its chemical composition and depends on the type, variety of flour and formulation. With an increase in the type of flour increases the amount of energy released. Bread varieties where the formulation provides for the addition of various nutrients are characterized by a higher energy value;

- bread products can be classified according to the type of flour, dough formulation, baking method, sales method;

- in addition to the main raw materials used in the preparation of bakery products, auxiliary raw materials are also added, which can improve the taste and consistency of the bread, increasing its nutritional value;

- The quality of products directly depends on the production technology, as well as on the quality of raw materials taken for the manufacture of bread and bakery products.

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7. GOST 6882 Dried grapes. Technical conditions

8. GOST R 52189 Wheat flour. General technical conditions

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10. STATE STANDARD 32786-2014 Fresh table grapes.

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ӨСІМДІК ШИКІЗАТЫНАН АЛЫНҒАН ҚОСПАЛАРДЫ ҚОЛДАНА ОТЫРЫП, НАН ӨНДІРУ ТЕХНОЛОГИЯСЫН ЖАСАУ

Аңдатпа

Соңғы жылдары наубайхана саласын дамытудың бір шешімі оның сапасы мен тағамдық құндылығын арттыру болып табылу болғандықтан тұрақты тамақтану тұрғысынан жоғары тұтынушылық қасиеттері бар және төмен энергетикалық құндылығы бар нанды әзірлеу және енгізу. Дұрыс тамақтану мәселесі әлемнің көптеген елдеріндегі тамақ өндірушілері үшін өзекті. Қазақстанда нан негізгі азық-түлік өнімдерінің бірі болып саналады, сондықтан нан пісіру саласын дамытудың басым бағыты оның сапасы мен тағамдық құндылығын арттыру болып табылады. Жақында бұл мәселені ұтымды тамақтану тұрғысынан шешудің бірі-жоғары тұтынушылық сипаттамалары мен төмен энергетикалық құндылығымен сипатталатын нанды әзірлеу және енгізу.

Олардың экологиялық тазалығынан басқа, диеталық және емдік-профилактикалық қасиеттердің болуын білдіреді.

Ғылыми зерттеулер, эксперименттер жүргізу:

* Өсімдік шикізаты қоспаларының бидай ұнының пісіру қасиеттеріне және бидай қамырының сапалық көрсеткіштеріне әсерін зерттеу

* Өсімдік қоспаларының бидай қамырының сапалық көрсеткіштеріне және нанның тұтынушылық қасиеттеріне әсерін зерттеу

* Сақтау кезінде өсімдік шикізатының қоспаларымен дайындалған бидай нанының сапасының өзгеруін және т. б

Бұл жұмыстың ғылыми жаңалығы-өнімнің тағамдық және энергетикалық құндылығын арттыруға оң әсер ететін Өсімдік шикізатынан жасалған қоспаларды қолдана отырып, нан алу. Тәжірибелік зерттеулер арқылы алынған өсімдік негізіндегі қоспаларды қолдана отырып нан өндіру технологиясы адам ағзасы үшін маңызды болады.

Өсімдік шикізатын қосу арқылы тағамдық және биологиялық құндылығы жоғары жаңа типтегі нан алу. Тағамдық және биологиялық құндылығы жоғары нан жаңа түрлерін өндіруде өсімдік шикізатын пайдалану өнімнің осы түрінің ассортиментін кеңейтеді, адам

ағзасын пайдалы микроэлементтермен байытып, тағамдық құндылығын арттырады және сақтау мерзімін ұзарту мақсатында жүзім өнімінен және жүзім тұқымынан өнімнің пайда болуы.

Кілт сөздер: Бидай наны, жүзім тұқымы, микроэлементтер, дәрумендер, шикізат, қоспалар, биологиялық құндылық, тағамдық және емдік құндылығы.

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РАЗРАБОТКА ТЕХНОЛОГИИ ПРОИЗВОДСТВА ХЛЕБА С ИСПОЛЬЗОВАНИЕМ ДОБАВОК ИЗ РАСТИТЕЛЬНОГО СЫРЬЯ

Аннотация

В последнее время одним из решений развития хлебопекарной промышленности является повышение ее качества и пищевой ценности, с точки зрения устойчивого питания - это разработка и внедрение хлеба с высокими потребительскими свойствами и низкой энергетической ценностью. Проблема здорового питания актуальна для производителей пищевых продуктов во многих странах мира. В Казахстане хлеб считается один из основных продуктов питания, поэтому приоритетным направлением развития хлебопекарной отрасли является повышение его качества и пищевой ценности. В последнее время одним из решений этой проблемы с точки зрения рационального питания является разработка и внедрение хлеба, отличающегося высокими потребительскими характеристиками и низкой энергетической ценностью.

Помимо их экологической чистоты подразумевает наличие диетических и лечебно-профилактических свойств.

Проведение научных исследований, экспериментов:

- Изучить влияние добавок растительного сырья на хлебопекарные свойства пшеничной муки и качественные показатели пшеничного теста
- Исследовать влияние растительных добавок на качественные показатели пшеничного теста и потребительские свойства хлеба
- Исследовать изменения качества пшеничного хлеба, приготовленного с добавками растительного сырья при хранении и т.д

Научная новизна данной работы заключается в получении хлеба, с использованием добавок из растительного сырья, которые положительно влияют на повышения питательной и энергетической ценности продукта. Полученная путем экспериментальных исследований технология производства хлеба с использованием добавок из растительного сырья будет важна для организма человека. Получение хлеба нового типа с повышенной пищевой и биологической ценностью за счет добавления растительного сырья. Использование растительного сырья при производстве новых видов хлеб с повышенной пищевой и биологической ценностью расширяет ассортимент данного вида продукции, обогащает организм человека полезными микронутриентами, увеличивает пищевую ценность и продлевает срок хранения.

Ключевые слова: Пшеничный хлеб, виноградная косточка, микроэлементы, витамины, сырье, добавки, биологическая ценность, пищевая и лечебная ценность.