

ENRICHMENT METHODS BASED ON SECONDARY RESOURCES BASED ON TRADITIONAL ADDITIVES FOR BREAD PRODUCTS

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ABSTRACT

Abstract. This article focuses on the enrichment of bread and bakery products. Nowadays, the demand for food products is increasing day by day. This leads to the production of new food products and the nutritional enrichment of existing products. In particular, the increased demand for bread and bakery products because of this, a lot of work is being done on creating new assortments of bread products. This article aims to further enrich existing bread products.

Key words: Bread products, protein, milk, acidity, lysine, pectins, ZOK, whey protein.

АННОТАЦИЯ

Аннотация. В данной статье основное внимание уделяется обогащению хлеба и хлебобулочных изделий. В настоящее время спрос на продукты питания увеличивается день ото дня. Это приводит к производству новых продуктов питания и обогащению пищевых продуктов существующих продуктов. В частности, повышенный спрос на хлеб и хлебобулочных изделий в связи с этим ведется большая работа по созданию новых ассортиментов хлебобулочных изделий. Эта статья направлена на дальнейшее обогащение существующих хлебобулочных изделий.

Ключевые слова: Хлебные изделия, белок, молоко, кислотность, лизин, пектины, ЗОК, сывороточный белок.

In recent years, the population of Uzbekistan has shown special interest in new types of fortified bread products, and attention has been paid to food safety. The development of fortified products faces the problem of changing their consumption properties, primarily organoleptic properties. This confirms the need to use organoleptic properties as a criterion for selecting a physiologically valuable food ingredient and its dosage. When creating a new type of this product, it is important to

solve two main tasks: - to achieve satisfactory organoleptic characteristics; - Ensuring the established nutritional compatibility and safety of the product through the selection of special technological methods and recipes. The main raw material for the production of bakery products is high-quality wheat flour, which differs from other types of flour in the lack of some essential amino acids, vitamins and trace elements. In this regard, the search for solutions to increase the biological value of these bakery products is particularly relevant. The choice of enrichment raw material is determined by its chemical composition, biological availability, technological properties, price and other factors. The choice of enrichment should also take into account the fact that the amount of biologically active substances corresponds to the regulated levels of daily physiological needs of the human body (adequate and high permissible consumption). The same requirements should be followed when selecting secondary raw materials to obtain enrichment additives. A complex of essential amino acids (lysine, threonine and tryptophan), a number of vitamins and trace elements, indigestible carbohydrates, including biologically active substances, in the enrichment supplement, which optimizes the content of physiologically valuable nutrients in ready-made bakery products made of high quality wheat flour should be (celluloses, hemicelluloses, low esterified pectins, lignin) [2]. Among the various additives that increase the nutritional value of bakery products are fortification additives, which contain natural raw materials in their composition. However, currently the use of secondary raw materials in baking is not widely introduced. In addition, the range of enrichment additives offered to the baking industry is mainly characterized by additives with relatively limited functional properties. In this regard, it is promising to create local multi-component mixtures and additives based on various combinations of secondary raw materials, which will allow to comprehensively enrich bread products. The creation of such enrichment tools can use ingredients derived from secondary raw materials from animal and plant sources. A valuable source of animal protein are cottage cheese whey and whey protein concentrates. Whey protein is balanced in lysine, tryptophan, methionine and other amino acids that are deficient in flour. Serum contains digestible organic calcium, which is a complex of minerals [3]. The use of cottage cheese whey in the production of bakery products not only increases the nutritional value of products, but also improves the taste and aroma, increases the carrying capacity of baker's yeast and enhances the process of baking dough due to the presence of organic acids. Whey protein concentrates contain almost non-denatured proteins that are gel-like and emulsifying. The biological value of such proteins is significantly different from the biological value of other types of whey proteins.

It was found that when such WPK is added, the acidity increases, the rheological properties of the dough change, and the bread retains its freshness better. Thus, the nutritional value and biological activity (sorption and nutritional properties) of this product indicate the expediency of using it as a fortifier for bakery products.

However, there is no information in the scientific and technical literature on the technological properties of this enrichment in the production of bakery products. To determine the possibility of using similar enrichments, we studied its effect on the quality of bread made from the highest grade wheat flour. Wheat flour was used in the work (sample 1), WPK in the amount of 2.0 to 16.0% by weight of flour was included. The dough was prepared in a non-dough method according to the recipes and parameters given in Section 2.2.5, the quality of the bread was determined by organoleptic and physicochemical parameters using the methods described in Section 2.2.6. ZOK has been found to affect the quality of bread, the degree of effect depends on the dose of the supplement. If WPK is used in the amount of 8.0-12.0% by weight of flour, the bulk yield of bread is 18.0-22.0%, the stability of the form - 15.0-19.0%, the porosity - 5.0-7.0%, crushed compressive deformation - 18.0-22.0%. 34.0-42.0%, respectively, relative to control. The addition of 6.0-8.0% WPK gives the product a pleasant taste and aroma of slightly sour milky color, which is probably due to the presence of whey. With an increase in the dose of WPK by 8.0%, the product crushed beets will have a more intense color.



With the addition of whey protein concentrates

without additions

Thus, the theoretical and experimental substantiation of the choice of enrichments based on secondary raw materials for bakery products shows the relevance of obtaining a concentrated multicomponent supplement based on extracts from beet pulp with the addition of protein fortifiers - whey and whey protein concentrate. Leads to an increase in the volume of bread in the production of bakery products.

REFERENCES

1. Azizi, M. H. , Sayeddin S., and Payghambaroost S.. 2006. Effect of flour extraction rate on flour composition, dough rheology characteristics and quality of flat breads. *J. Agric. Sci. Technol.* 8:323–330.
2. Woldegiorgis, A. , Abate D., Haki G. D., and Ziegler G. R.. 2014. Antioxidant property of edible mushrooms collected from Ethiopia. *Food Chem.* 157:30–36.
3. Shevernitskaya O. N. Development of technology for a combined powder product based on pectin-containing raw materials: diss. ... cand. tech. Sciences: 05.18.01 /Shevernitskaya Olga Nikolaevna. - M., 2010. S.- 219