



ANALYSIS OF THE SIGNIFICANCE OF VEGETABLE IMPROVEMENTS APPLIED TO THE FUNCTIONAL PROPERTIES OF BAKERY FLOURS

Mustafaev O.Sh

TSTU PhD student

Ravshanov S.S

TCTI, Ph.D., Assoc.

Karimov D.T

TCTI, master

Abdullayeva F.B

TCTI

Abstract: *This article discusses the importance of ensuring the quality and sustainability of bakery products in our Republic as one of the most relevant directions of this industry. In particular, the functional properties of bakery flour varieties - the ability to produce and store gas in the dough, rheological properties, volume, structure and shelf life of the finished product - are of decisive importance in meeting consumer requirements. These indicators, in turn, are directly related to the chemical composition of flour and various improvers used in the production process.*

In recent years, due to the increasing restrictions on the use of chemical additives from the point of view of environmental safety and human health, interest in plant-based improvers has been growing.

Such improvers obtained from natural sources are rich in biologically active substances, which not only improve the functional properties of bakery flour varieties, but also allow increasing the nutritional value of the product. Therefore, a scientific analysis of the significance of plant-based improvers used in the functional properties of bakery flour varieties, as well as an assessment of their technological effectiveness and application prospects, is of great scientific and practical importance.

Effect of different concentrations (10, 16, and 22% by mass of flour products) on the quality of bakery products from the aqueous suspension of the complex additive composed of jaidari wheat flour, recovered spelled and pumpkin seed flour, oyster mushrooms, and blackberry fruit powders (56.3:25.0:17.2:0.9:0.6) to high-grade wheat flour. studied [1].

According to him, when 16% of this complex additive was added, all indicators of bread products were improved compared to the control [1].

Secondary raw materials of food enterprises (rice, wheat corn husks, brown kernels, grape skin and seed extracts, tomato seeds and skins, artichoke stems and leaves) add fiber



and bioactive substances to bakery products. improves absorption, which is important as a sustainable approach to food security.

Flour from *Prosopis* spp. is a non-traditional and promising raw material source, rich in carbohydrates, minerals, and phytochemicals, and flours from different parts of the legume have antioxidant and anti-inflammatory activities. Ground *Prosopis* legume fruits are a suitable ingredient for use in the production of bread, cookies, and gluten-free products [4].

Bread, as a staple food, has traditionally been made from high-grade wheat flour. As a result of the increase in bread consumption in developing countries, global demand for food is increasing even in regions where climatic conditions are not suitable for wheat cultivation.

It has been studied that the dependence on wheat flour poses a threat to the sustainability of food systems, therefore, its partial replacement with non-traditional plant flours (composite bread) is considered a promising direction, and the feasibility of increasing the sustainability of food systems by partially replacing wheat flour with ingredients based on various plant sources in bread production has been analyzed [5].

Also, in recent years, extensive research has been conducted on the use of plant-based additives in the production of bread products, and their functions and a list of studies conducted are presented in Table 1 below.

Table 1

Analysis of research on plant-based additives recommended for use in the production of bakery products

No.	Additional name	The effect on bread
1	Wheat gluten	Increases dough elasticity and gas retention capacity
2	Lecithin (soybean seed)	Improves dough stretchability and texture
3	Wheat bran	Increases the amount of fibers and bioactive substances
4	Rice flour	Increases fiber and antioxidant properties
5	Melon seed powder	Increases the proportion of proteins and minerals
6	Cottonseed meal	Improves protein content and dough texture
7	Sesame seeds	Increases protein and antioxidant content
8	Flaxseed	Increases the percentage of omega-3 and fiber
9	Almond seeds	Improves protein and fat value
10	Carrot powder	Significantly increases the amount of bioactive substances and vitamin A
11	Tomato powder	Increases the proportion of lycopene and antioxidants
12	Apple powder	Increases fiber and vitamin content
13	Melon powder	Increases the percentage of bioactive substances



14	Tomato peel powder	Increases antioxidant content
15	High-fiber grains (oats, barley)	Increases fiber and protein content
16	Amaranth flour	Increases protein and antioxidant content
17	Fruit supplements	Increases the percentage of bioactive substances

The analysis of the above studies showed that the use of plant additives is important in the production of bread from wheat flour with low baking properties in the Republic. It is especially important to research the vegetable additives needed to increase gas production and holding capacity, rheological properties, size, structure and shelf life of the finished product.

Studies have shown that various plant components (wheat gluten, lecithin, wheat bran, melon and tomato seed powder, carrot and apple powder, high-fiber grains, amaranth flour and fruit additives) significantly improve the functional and nutritional properties of bread products.

This improves the quality of the dough, increases its nutritional value, functional properties, enriches it with dietary fiber, minerals, and is important for the population that consumes the most bread products.

Thus, the use of plant-based additives in the production of bread products from wheat flour with low baking properties grown in our republic is not only technologically important, but also nutritionally and environmentally, which indicates the need for research and the introduction of innovative technologies in this area.

USED LITERATURE:

1. Maslov Alexander V., Mingaleeva Zamira Sh., Yamashev Timur A., & Starovoitova Oksana V. (2023). EFFECTS OF A PLANT-BASED ADDITIVE ON THE PROPERTIES OF FLOUR AND DOUGH DURING FERMENTATION. *Техника и технология пищевых производств*, 53 (2), 347-356.
2. Amoah, I., Taarji, N., Johnson, P.-NT, Barrett, J., Cairncross, C., & Rush, E. (2020). Plant-Based Food By-Products: Prospects for Valorization in Functional Bread Development. *Sustainability*, 12(18), 7785. <https://doi.org/10.3390/su12187785>.
3. Kowalska, H.; Czajkowska, K.; Cichowska, J.; Lenart, A. What's new in biopotential of fruit and vegetable by-products applied in the food processing industry. *Trends Food Sci. Technol.* 2017, 67, 150–159. <https://doi.org/10.1016/j.tifs.2017.06.016>.
4. González-Montemayor, Á. M. and Flores-Gallegos, AC and Contreras-Esquivel, JC and Solanilla-Duque, JF and Rodríguez-Herrera, R., 20193510580, English, Journal article, UK, doi:10.1016/j.tifs.2019.09.023, 0924-2244, 94, Oxford, Trends in Food Science & Technology, (12–19).





5.Wang, Y., Jian, C. Sustainable plant-based ingredients as wheat flour substitutes in bread making. *npj Sci Food* 6, 49 (2022).<https://doi.org/10.1038/s41538-022-00163-1>.

