

INCREASING THE NUTRITION OF BREAD PRODUCTS ENRICHED WITH MICRONUTRIENTS

Utanova Nazirakhan Makhmudjonovna

Graduate student of Fergana Polytechnic Institute, "Food Safety" department

<https://doi.org/10.5281/zenodo.6819293>

Abstract. This article is about the chemical composition of bread products enriched with vitamins and minerals, their nutritional value and increasing the nutritional value of the product.

Key words: micronutrient, protein-rich grains, flour composition, carotene, enzyme, pigment, assortment

ПОВЫШЕНИЕ ПИТАТЕЛЬНОСТИ ХЛЕБНЫХ ИЗДЕЛИЙ, ОБОГАЩЕННЫХ МИКРОЭЛЕМЕНТАМИ

Аннотация. В данной статье речь идет о химическом составе хлебных изделий, обогащенных витаминами и минералами, их пищевой ценности и повышении пищевой ценности продукта.

Ключевые слова: микроэлемент, белковая крупа, состав муки, каротин, фермент, пигмент, сортимент.

INTRODUCTION

When enriching products with micronutrients, it is necessary to take into account their loss during product production, obtaining natural vitamin and mineral products contained in raw materials, production processes and storage.

Food consumed by humans contains water, protein, carbohydrate, fat, and mineral substances. These are important for the normal functioning of the human body. Bread is the main tool that restores the human body. A person should eat an average of 500 grams of bread per day.

The function of mineral substances is different:

Calcium, phosphorus, magnesium - ensures the normal state of the skeleton;

Fluoride - ensures the resistance of tooth enamel to diseases;

Iron, copper - performs the function of transporting oxygen;

Iodine affects the functioning of the thyroid gland.

RESEARCH METHODS AND METHODOLOGY

There are 2 ways to enrich bread products with vitamins:

1. Adding vitamins to flour
2. Add to the kneading process

Both of these methods are effective.

When vitamins are added to flour, they gradually interact with other components, and B vitamins are well preserved in bread products. The preservation of vitamins in bread is influenced by the type of flour, the duration of cooking and the amount of vitamins.

Cereals serve as the main raw material for the flour and cereal industry. Grains are divided into 2 groups according to their chemical composition:

1. Grains rich in starch - wheat, rye, barley, millet, rice, corn and buckwheat;
2. Grains rich in protein - legumes: peas, beans, mung beans, lentils.

Grains are studied in 3 assortment groups according to their botanical characteristics: grain group, buckwheat group and leguminous grain group. Now let's consider each assortment group

separately. Grain group. The main cereals in this group are wheat, rye (black wheat), barley, oats, corn, rice, millet, sorghum. The structure of their grain is approximately the same, consisting of shells (fruits and seeds), aleurone layer, floury core (endosperm) and bran. The chemical composition of grain consists of the following substances:

- carbohydrates appearing as starch - 60-70%;
- protein - 10-20%;
- lipids - 2-3%;
- vitamins - E, B, carotene, etc.;
- mineral substances (phosphorus, potassium, magnesium, manganese, spirit, cobalt) – 1.5-3%;
- enzymes;
- pigments - chlorophyll and carotenoids that color the grain.

Mosh grain contains 24-28% protein, 2-4% oil, 46-50% starch, group B vitamins, lysine, arginine. stands out. Mosh grain is 1.5-2 times higher in nutritional value than wheat, bean, pea, poppy and rye grains, and 1.5 times higher in nutritional value. The digestibility of the protein contained in mosh reaches 86%. In addition, mosh grain contains macro-microelements such as Mg, Ca, Na, Fe, Ma, Cu, B, Co, Ni, I, and is rich in phosphorus salts. In some countries, a salad is made from mung beans. In the pasta and confectionery industry, if 30 percent of mash flour is added, the quality will be radically improved. According to the information provided by medical experts, the daily protein requirement of a middle-aged person is 70-80 grams. around. It is known that protein plays a special role in performing many functions in the body, improving the work of hormones and enzymes.

RESEARCH OUTCOME

Bread is mainly made from wheat and rye flour. Products such as milk, oil, sugar, eggs, kiyam, raisins, and spices are added to bread to increase its nutritional value. The nutritional value of bread is largely influenced by the type of flour. The lower the grade of flour, the more nutritious the bread, the higher the grade of flour, the more starch and less vitamins and minerals.

Bread should be stored in dry, clean, ventilated rooms with a temperature not lower than 60C. The deadline for storing ripe bread is set: rye bread made from jaidari flour, rye-wheat bread is stored for 48 hours, wheat bread for 24 hours, and small-sized bread products for 16 hours.

Bakery products have the following very diverse assortment groups:

- Bun products contain flour, oil, sugar, milk and spices;
- Tishikkulcha products-sushkis, bublikis;
- Cookies;
- There are types of pasta products - vermicelli, noodles, shaped, and long.

Bakery products are stored in well-ventilated, dry, room temperature 16-180C, relative air humidity no more than 75%. Most bakery products are stored in cardboard boxes or bags. The labeling of packaged bread products should contain basic information such as the name of the bread product, the name and address of the manufacturer, the nutritional value, the shelf life, and the time of production. The shelf life of pasta products is from 3 months to 1 year, depending on their type.

Bread, bakery products are classified in the TIF TN of the Republic of Uzbekistan in the 19th group of the IV section in the 1905 product position, and pasta products in the 1902 product position of this group.

The chemical composition of flour depends on the composition and type of grain. The higher the grade of flour, the more starch it contains. The content of other carbohydrates, as well as fat, ash, proteins and other substances increases with the decrease in flour type.

Nitrogen and protein substances. Nitrogenous substances are mainly composed of proteins. Non-protein nitrogenous substances (amino acids, amides, etc.) are present in a small amount (2-3% of the total mass of nitrogenous compounds). The higher the productivity of flour, the more nitrogenous substances and non-protein nitrogen it contains.

Wheat flour proteins. It is dominated by simple proteins - proteins. Flour proteins have the following content (in %): prolamins 35.6; glutelins 28.2; globulins 12.6; albumins 5.2. Average protein content of wheat flour is 13-16%, insoluble protein is 8.7%.

Gluten content. Raw gluten contains 30-35% dry matter and 65-70% moisture. 80-85% of gluten solids are proteins and various flour substances (lipids, carbohydrates, etc.) with which gliadin and glutenin react. Gluten proteins bind half of the total amount of lipids. There are 19 amino acids in gluten protein. Glutamic acid (about 39%), proline (14%) and leucine (8%) predominate. Different types of gluten have the same amino acid composition, but different molecular structure. The rheological properties of gluten (elasticity, elasticity, extensibility) mainly determine the baking value of wheat flour.

DISCUSSION

Although bread products have a high nutritional value, they contain small amounts of essential substances such as non-exchangeable amino acids lysine and methionine, calcium, vitamins B₁ and B₂. Milk and dairy products used to increase the nutritional value of bread products, including skimmed milk powder, condensed milk and whey powder, enrich bread with calcium and essential amino acids. The content of such substances as Ca, P in dairy products is more proportional to the content of grain, flour and bread products.

In some regions of our country, iodine enrichment of bread is widely used to prevent goiter (thyroid disease). For this purpose, pure iodine preparation or sea cabbage rich in iodine is used. The use of fruits and vegetables and their processing products increases the volume of bread, ensures that the core has a thin membrane porosity, the crust is yellow-brown, and the bread is tasty and fragrant. In addition, bread contains easily digestible sugars, organic acids, macro and microelements (K, Na, Ca, P, Mg, Fe), vitamins (C, B₁, B₂, B₆, PP), pectin and it is enriched with dietary fiber, and through this, there is an opportunity to increase the satiety and nutritional value of bread products.

Many positive results have been achieved in the field of bread and bakery products production in our country. In this regard, it is necessary to note the place of bread and bakery products production shops belonging to the enterprises of the joint-stock company "O'zdonmahsulot". Improving the quality of the product, enriching its composition with useful substances for the human body: carbohydrates, proteins, vitamins and minerals, has been actively implemented, which serves the interests and health of our people.

CONCLUSION

The creation of functional food products meets the medical and biological requirements for the products and supplements being developed. Requirements for functional foods have their own characteristics. Thus, for example, dietary foods and children's food (for general purposes) differ in the maximum permissible values for fats, proteins, amino acid content, vitamins, microorganisms, etc.

REFERENCES

1. Sattarova Barnokhon, Utanova Nazira, & Makhmudova Aziza. (2022). THE IMPORTANCE OF ENRICHMENT OF BAKERY PRODUCTS WITH VITAMINS AND MINERALS ON HUMAN HEALTH. *International Journal of Advance Scientific Research*, 2(04), 34–42.
2. B. N., S., & N. M., U. (2022). FOOD EMULSIFIERS IN BREAD PRODUCTS AND IMPROVING THE NUTRITIONAL QUALITY OF BREAD PRODUCTS. *Innovative Society: Problems, Analysis and Development Prospects*, 130–134.
3. Barnokhon Sattarova, Maxmudova Aziza, & Utanova Nazira. (2022). THE IMPORTANCE OF ENRICHING CONFECTIONERY PRODUCTS WITH VITIMAN AND MINERALS. *International Engineering Journal For Research & Development*, 7(1), 4.