APPLICATION OF A SEMI-FINISHED PRODUCT FROM SUNFLOWER SEEDS, AFTER EXTRACTION OF OIL IN THE TECHNOLOGY OF RYE-WHEAT BREAD

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The problem of insufficient biological value of bread is a common part of the problem of protein deficiency in the diet of the population [1]. To compensate for the lack of protein, protein-containing raw materials with a higher content of protein and the most deficient essential amino acids are added to the bread recipe [2].

The source of protein substances can be sunflower seeds after oil extraction, which are accumulated in oil plants.

Particular attention should be paid to their high protein content (more than 39% in terms of dry matter), which includes essential amino acids and no anti-nutritional substances, as well as low cost, which makes it a promising protein-containing raw material for use in nutrition [3]. Works [2, 3] showed that certain difficulties arose in the production of bread enriched with protein from sunflower seeds and products of their processing. Application of 5% or more of sunflower flour or protein isolate from sunflower seeds or meal when using the traditional technology of making bread, it led to a deterioration in its quality – darkening of the crumb, insufficiently developed porosity, which significantly reduced the consumer attractiveness of finished products.

We have developed a semi-finished product based on sunflower seeds after pressing the oil for use in the production of confectionery and bakery products.

The chemical composition of the semi-finished product per 100 grams: protein – 40%, fat 23%, carbohydrates 21% [4].

The purpose of this work is to study the possibility of using a semi-finished product based on sunflower seeds after pressing oil in the bread recipe to increase its nutritional value, improve organoleptic and physico-chemical parameters. Trial laboratory baking was carried out with a dose of semi-finished product leveling 7 and 11% to the total mass of flour. The recipe for rye-wheat bread was chosen as a control.

Taking into account the known technological incompatibility of sunflower proteins and wheat flour, the mandatory conditions were to reduce the contact of the introduced semi-finished product with the dough, enhanced mechanical processing of the dough during kneading and reduce the duration of its fermentation.

On the basis of the conducted research, it was established that the introduction of a semi-finished product based on sunflower seeds into the bread recipe after pressing the oil changes the organoleptic properties and physical and chemical indicators of the quality of finished products. prototypes of bread had a well-developed porosity; the color of the crumb had a yellowish tint and a delicate smell of sunflower oil. It was noted that when adding a semi-finished product, the acidity of finished products slightly increases, which is associated with the presence of a certain amount of chlorogenic acid in it, which makes it possible to reduce the duration of proofing of dough pieces.

The conducted studies have shown that the most significant positive effect on the quality of bread has the introduction of a semi-finished product in the amount of 11%, allowing you to get bread with increased nutritional value and improved organoleptic and physico-chemical parameters.

References

1. Bhise S. R Texturization of deoiled cake of sunflower, soybean and flaxseed into food-grade meal and its utilization in preparation of cookies / S. R. Bhise, A. Kaur, P. Ahluwali, S. S. Thind // Nutr Food Sci. 2014. Vol. 44. № 6. P. 576–585.

2. Srilatha K. Proximate Composition and Protein Quality Evaluation of Recipes Containing Sunflower Cake / K. Srilatha, K. Krishnakumari // Plant Foods for Human Nutrition. 2003. Vol. 58. P. 1–11.

3. Girchuk O., Levytska A.O. Development of the confectionery market in Ukraine, competitive aspects. URL: http://intkonf.org/girchuk-o-levitska-a-o-rozvitok-rinku-konditerskih-virobiv-v-ukrayini-konkurentni-aspekti/

4. Mass for the formation of confectionery, does not contain gluten, according to TU U 10.8 -41009811-001:2017".