Global Scientific Review
A Peer Reviewed, Open Access, International Journal
www.scienticreview.com
Volume 26, April 2024 ISSN (E): 2795-4951

Improving The Recipe and Technology of Wheat Bread Using Apple Pomace

Rahimova Aziza Rashidovna
Faculty of Chemical and Food Technologies
Student of the Department of Food Technologies
Bukhara Institute of Engineering and Technologies

Abstract. The influence of apple raw materials (powder from apple pomace and frozen apple pomace) on the duration of individual operations of the technological process of the straight method of producing wheat bread was studied: the duration of kneading, the number of kneadings, the duration of the dough fermentation process and proofing of dough pieces. As studies have shown, when using recycled apple raw materials in the production of wheat bread, the amount of yeast must be increased to 3-4%, in contrast to the 1-2% introduced in the control sample.
Keywords: Wheat Bread, Straight Method, Technological Process, Apple Pomace, Dough Fermentation.

Introduction

Bread and bakery products are everyday products. Now the Russian bread market includes both traditional types of bread - wheat, wheat-rye, rye, whole grain, and the premium category that has been emerging in recent years - bakery products with a limited shelf life, content of minerals and organic elements, low-calorie varieties and etc. [1;2;3;4]

Materials And Methods

The dynamic development of the functionally oriented bakery products market segment requires manufacturers to expand their range. One of the directions for developing the range and creating new types of products is the enrichment of wheat bakery products with various types of flour and other fortifiers.
Since the main goal of the study is to develop a bread recipe using apple raw materials, from apples grown in the Kursk region, and the work proposes to use secondary raw materials - apple pomace.
When preparing the dough, we used a straight method, in which the entire amount of water heated to a temperature of 30–36°C, flour, salt and yeast intended for making a given portion of dough are immediately mixed.
The fermentation time of the dough depends on the temperature of the dough and the room, the amount of yeast and the baking qualities of the flour. With the straight method, the fermentation time of the dough is 2 hours.
For a straight dough, kneading it twice during fermentation should be considered mandatory; even kneading it three times is normal.
Only with sufficient and timely kneading can you obtain a straight dough that is well fermented and gives the bread normal taste and porosity.

Results And Discussion

To conduct the experiment, the recipe was taken as a basis, calculated on the basis of a standardized recipe for wheat hearth bread. The control was bread made from wheat flour, prepared according to a standardized recipe presented in Table 1.

Table 1.
Recipe for control bread sample

Raw material composition	Rate (net) per serving
Baking wheat flour, g	160
Water, ml	110
Yeast, g	5,5
Vegetable oil, ml	10
Sugar, g	5
Salt, g	2,5

Taking into account the beneficial effect of apple raw materials on the vital activity of yeast cells, it was proposed to change the recipe: replacing sugar in the recipe with apple raw materials; by reducing the amount of wheat flour by replacing it with buckwheat flour and apple raw materials.

When developing the recipe for wheat bread with buckwheat flour and apple pomace, the standard non-steam production technology was also used, with some modifications [5;6;7;8].

For a sample with freshly frozen apple pomace, it is necessary to pre-soak the defrosted apple pomace in a mixture of vegetable oil and warm water (water temperature 28–30 ℃); while stirring, bring the mixture to a homogeneous consistency and let stand for 2–3 minutes. At the same time, mix the entire amount of flour, salt, and yeast for 2 minutes, and then add the prepared mixture [9;10;11].

After kneading, the dough in a rotating hopper with a cone-shaped bottom undergoes fermentation - the time is 5–7 minutes, the temperature of the dough rises to 30 °C. Then kneading is done, after which the fermentation process continues for another 5–7 minutes. In the classic technological process using the non-steam method, two kneadings are provided. In our case, since the recipe uses buckwheat flour, which has weak gluten, the dough is kneaded only once so as not to deteriorate the quality of the bread and to obtain bread of normal taste and porosity [12;13].

Conclusion

In the course of the study on the development of recipes for baked goods with the addition of apple raw materials, the following conclusions were made:

— the amount of yeast must be increased to 3–4%, in contrast to the 1–2% introduced in the control sample;

— add apple pomace powder in the first sample, freshly frozen apple pomace in the second sample, pre-soaked in a mixture of vegetable oil and warm water (water temperature 28–30°C) while stirring and bringing to a homogeneous consistency, and leave this mixture for 2–3 minutes;

— the degree of influence of apple products on the technological process and quality of bread depends on the type of product added to the dough (apple powder or frozen pomace) and its quantity;
— apple products stimulate (apple powder or frozen pomace) the fermentation process of the dough. At the same time, the duration of dough ripening and proofing operations are reduced;
— the quality of the finished product depends on the type of additive: freshly frozen apple pomace largely improves the porosity and taste of bread.

References

1. Kuznetsova E.A., Mordvinkin S.A., Zenina E.A. Optimization of the recipe composition of wheat bread using processed vegetable raw materials // Vestnik VGUIT. 2019. T. 81. No. 3. P. 64–69. doi: 10.20914/2310–1202–2019–3–64–69
2. Parenti O., Guerrini L., Zanoni B. Techniques and technologies for the breadmaking process with unrefined wheat flours // Trends in Food Science & Technology. 2020. V. 99. P. 152–166. doi: 10.1016/j.tifs.2020.02.034
3. Pyanikova E.A., Kovaleva A.E., Ovchinnikova E.V., Alekseeva D.I. Apples are a storehouse of vitamins and vital chemical compounds // Problems of identification, quality and competitiveness of consumer goods: collection of articles of the III International Conference in the field of merchandising and examination of goods. 2013. pp. 250–253.
4. Boyer J., Liu R.H. Apple phytochemicals and their health benefits // Nutrition Journal. 2014. V. 3. P. 1–15.
5. Хужакулова, Н. Ф. СРАВНИТЕЛЬНАЯ ХАРАКТЕРИСТИКА ЗЛАКОВЫХ ЗЕРЕН, ВЫРАЩЕННЫХ В РАЗЛИЧНЫХ ПОЧВЕННЫХ УСЛОВИЯХ. // ББК 36 Т38 Редакционная коллегия: д. т. н., профессор Акулич АВ (отв. редактор) к. э. н., доцент Козлова ЕА (отв. секретарь), 165.
6. Жабборова, Д. Р., ВЛИЯНИЕ ГИДРОТЕРМИЧЕСКОЙ ОБРАБОТКИ НА БИОХИМИЧЕСКИЕ СВОЙСТВА ЗЕРНА ПШЕНИЦЫ. // Мажидов, К. Х., & Хужақулова, Н. Ф. // *Universum: технические науки*, 2020, (7-2), 43-45.
7. Ergasheva, H.B, Enrichment of Wheat Flour with Shorts at Flour-Milling Enterprises// Khujakulova, N.//Journal of Pharmaceutical Negative Results, 2022, 13, pp. 2359–2363
8. Akabirov, L., Research of impact of discharge parameters of electric impulse on the damage of tissue cells of the fig and the drying process and determination of its parameters// Narziyev, M., Khujakulova, N.//Journal of Physics: Conference Series, 2022, 2388(1), 012180
9. Жабборова, Д. Р., Мажидов, К. Х., & Хужақулова, Н. Ф. (2020). ВЛИЯНИЕ ГИДРОТЕРМИЧЕСКОЙ ОБРАБОТКИ НА БИОХИМИЧЕСКИЕ СВОЙСТВА ЗЕРНА ПШЕНИЦЫ. *Universum: технические науки*, (7-2), 43-45.
10. Ergasheva, K. B., Khuzhakulova, N. F., & Elmurodova, A. S. (2022). Study of the influence of soil composition on the yield and quality indicators of wheat grain. *Texas Journal of Agriculture and Biological Sciences*, *4*, 17-21.
11. Мажидов, К. Х., Махмудов, Р. А., & Хужакулова, Н. Ф. (2018). КАЧЕСТВО И ФИЗИКО-ХИМИЧЕСКАЯ ХАРАКТЕРИСТИКА МЕСТНЫХ СОРТОВ

ЗЕРНА ПШЕНИЦЫ. *Наука и современное общество: взаимодействие и развитие*, *2*(1), 63-65.

12. Fayzullaevna, K. N., Halimovich, M. K., Bakayevna, K. M., Nusratovna, S. N., Bobonfzfrova, E. H., & Bakhtiyorovna, D. M. (2020). Assessment of grade and biochemical composition of" chillaki" wheat grain, grown in salted fields. *European Journal of Molecular and Clinical Medicine*, *7*(3), 3651-3655.
13. N.F.Xujakulova, K.A.Shokirov, H.B.Ergasheva, Sh.J.Yuldasheva, (2023). USE OF CEREAL PRODUCTION TECHNOLOGY IN THE FOOD INDUSTRY. *THE MULTIPISCIPLINARY JOURNAL OF SCIENCE AND TECHNOLOGY, VOLUME-3, ISSUE-5 ISSN: 2582-4686 SJIF 2021-3.261, SJIF 2022-2.889, 2023-5.384 ResearchBib IF: 8.848/2023 Pp:101-107*