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PROCEEDINGS

DEVELOPMENT OF BAKERY PRODUCTION TECHNOLOGY FUNCTIONALITY LONG TERM IMPLEMENTATION

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Bakery products play an important role in the diet of people in Ukraine and occupy a special place in their diet. The priority is the possibility of realization of freshly baked bread at any time of the day and closer to the consumer - in shops, cafes and restaurants, hotels, recreation centers, and various points of fast food from frozen convenience foods. Large plants can supply semi-finished products in small batches, which would be baked in places ultimate realization. There was a need to improve the technology of production of bakery products long-term implementation and improvement of the quality of finished products from frozen convenience foods. On the basis of theoretical and experimental studies, we developed the technology for production of frozen semi-finished bakery products of a functional purpose. Improved quality indicators of finished products through the use of potato starch and modified Paselli BC (E1414), replaced by chemical enhancers prescription components of natural origin, studied the possibility of using non-traditional types of flours. This enables the product raised food and biological value with high organoleptic and physico-chemical indicators of quality. The introduction of the technology into production in the presence of a number of benefits is appropriate.

Key words: bakery products, long-term implementation, frozen convenience foods, quality indicators

INTRODUCTION

Bakery products have a special place in the human diet. In the recent years, consumers prefer fresh baked goods from bakeries and cafes, as reduced bakery products on traditional technologies. Promising technology is "deferred-baking", which will allow large enterprises produce frozen ready meal and deliver them to the place of sale. This technology can be considered energy-efficient, due to partial baking. The advantage of baked goods made by the technology of "pent-baking" is a long-term storage.

The priority development opportunity is the realization of freshly baked bread with functional properties at any time of the day and closer to the consumer - from partially baked and frozen bakery.

In the production of bakery technology "deferred baking" multiple warehouses synthetic additives that prevents the production of functional bakery products from frozen partially baked semis (Solonytska, 2009., Kulp and Lorenz, 2005).

Selection and combination of prescription components, such as different types of flour, pectin, modified starch, processed rose, grape syrup, etc. makes it possible to improve the quality of finished products, baked from frozen partially baked and half-finished. And provide functional properties through the use of prescription ingredients of natural origin with a high content of micro, trace elements, vitamins, fiber and other additives that provide functional properties of bakery products.

These measures allow for product increased food and biological value with high organoleptic and physico-chemical quality.

In today's requirements for food, urgent need to improve the technology for the production of bakery products "deferred baking" technologies and improve the quality of finished products and frozen partially baked preparations. On the basis of theoretical and experimental studies,

we are developing the production technology of bakery products of a functional purpose of partially baked and frozen foods (Solonytska, 2015., Lebedenko, 2014).

The introduction of technology into production in the presence of a number of benefits is appropriate.

MATERIAL AND METHODS

It was decided to use to improve the rheological properties of dough syrup and high content of yeast. Due components made prescription can not only improve the quality and expand the range of baked goods made on technology "deferred baking".

Table 1– Recipe products 300 g flour

Crude	With buckwheat flour	With maize flour	With wheat chaff	W crude, %
wheat flour the highest grade	285	275	290	14,5
buckwheat flour	15	–	–	14,5
maize flour	–	25	–	14,5
wheat chaff	–	–	10	14,5
white salt	4,5	4,5	4,5	3,0
yeast baking pressed	9,0	9,0	9,0	75,0
syrup	15,0	15,0	15,0	22,0

The aim of the investigation was to define mass contents and influence of different kinds of meal on the quality of ready-made bakery of a long term of realization (Kulp and Lorenz, 2005). The laboratory baking of bread was carried out in a leavened-doughless way. The kneading of dough was conducted on a Brabender's pharinograph during ten minutes, then the dough was leavening for 60 minutes after the rising the dough was put in moulds and sent to be held out in the thermostat TS-80 during 40 minutes. The dough half-finished products were baked in the laboratory oven RZHLP at the temperature 220-230 ° C during 70 % of the total time of baking. The products were cooled in the laboratory condition and then were sent to a deep-freeze with the temperature of 18 degrees below zero. The period of freezing takes about 120 minutes. In such conditions the products were keeping during 3 days. The stage of defrost was conducted in the thermostat TS-80 at the temperature of 29-32° C degrees centigrade. The products were backed to the and during the left 30 % of the total time of baking. For control we took the products made according to the traditional technology.

RESULTS AND DISCUSSION

In studies determined the effect of maltose syrup on staling process and quality of the finished baked goods with partially baked preparations. Compared quality products made by traditional technology and the technology of "deferred baking". The use of syrup in baking production contributes to the quality of bakery products, accelerates the preparation of the dough, ensures the necessary rheological properties of dough, preserves the freshness of the finished bread.

With increasing dosage of syrup, creates a dense protein-carbohydrate structure by a uniform enveloping gluten starch granules resulting in a more uniform crumb structure, porosity developed with thin walls of the pores, increased specific volume and increased persistence in fresh. Syrup is an effective means of stabilizing the baking properties of flour, regulation of the fermentation process, the formation of certain properties of semi-finished products, improve the quality of bread, including slowing down the staling process and

reduce the friability of the crumb of bread products made by "deferred baking" technology (Drobot, 2002).

On research that adding syrup in an amount 5 % the weight of flour improves the organoleptic quality indicators products and avoids premature staling, to the presence of dextrin, which have a high viscosity. Bakery products within 24 hours of stored elastic crust and crumb.

To the results of carrying out of theoretical and experimental investigations development of technology for production of bakery products a long shelf life. Improved quality indicators finished products received by maltose syrup, which allows you to receive products with high organoleptic and physico-chemical indicators comparingi.

The bread made after the technology of partial baking does not have significant differences in organoleptic and in physico-chemical indicators comparing with the bread made according to traditional technology. The term freshness of products was extended by slowing the aging of starch.

The first phase of the study, we determined the effect of buckwheat flour on the structural, mechanical and physicochemical properties of finished products

Table 2. Physico-chemical indicators bread with buckwheat flour

Indicator	Control	Baked at 70 % and frozen
Weight, g	400,34	405,5
Specific volume, sm ³ /100g	2250	2200
Wetness, %	41,0	36,4
Acidity, grad	1,8	1,9
Porosity, %	55	58
Penetration, device units		
ΔH_{ov}	83	112
ΔH_{pl}	66	101
ΔH_{el}	17	11
Relative elasticity, %	79,5	90,1
Relative resilience, %	20,5	9,8

In the second phase we determined the effect maize flour on physico-chemical indicators comparing products.

Table 3. Physico-chemical indicators bread with maize flour

Indicator	Control	Baked at 70 % and frozen
Weight, g	417,8	438,4
Specific volume, sm ³ /100g	2250	2000
Wetness, %	41,7	34,6
Acidity, grad	1,6	2,0
Porosity, %	56	64
Penetration, device units		
ΔH_{ov}	115	79
ΔH_{pl}	100	65
ΔH_{el}	15	14
Relative elasticity, %	86,9	82,2
Relative resilience, %	13,0	17,7

Analysis of the quality of finished products showed that the addition of increased amounts of yeast can significantly increase the porosity of products. Adding to the recipe of molasses allowed to extend shelf life by improving the hydrophilic properties of the crumb and increasing content of water-soluble substances.

Table 4. Physico-chemical indicators bread with wheat chaff

Indicator	Control	Baked at 70 % and frozen
Weight, g	409,9	407,4
Specific volume, sm ³ /100g	2300	2280
Wetness, %	36,3	40,2
Acidity, grad	1,0	0,8
Porosity, %	56	73
Penetration, device units		
ΔH_{ov}	55	101
ΔH_{pl}	36	76
ΔH_{el}	19	25
Relative elasticity, %	65,4	75,2
Relative resilience, %	34,5	24,7

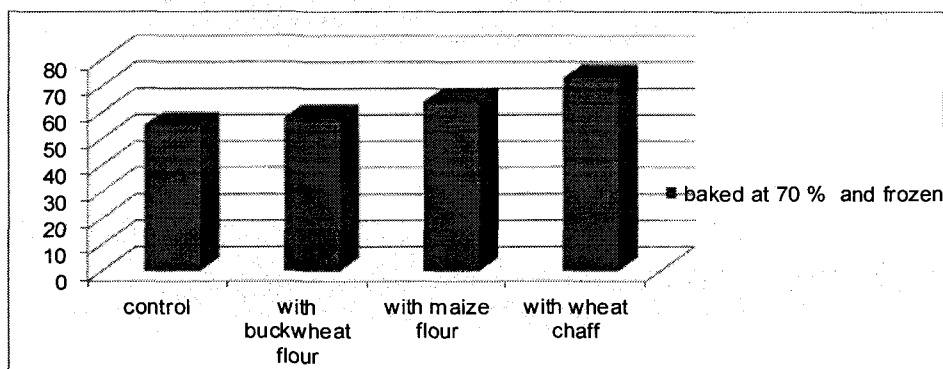


Figure 1. Graph of the porosity of the finished products from selected additives

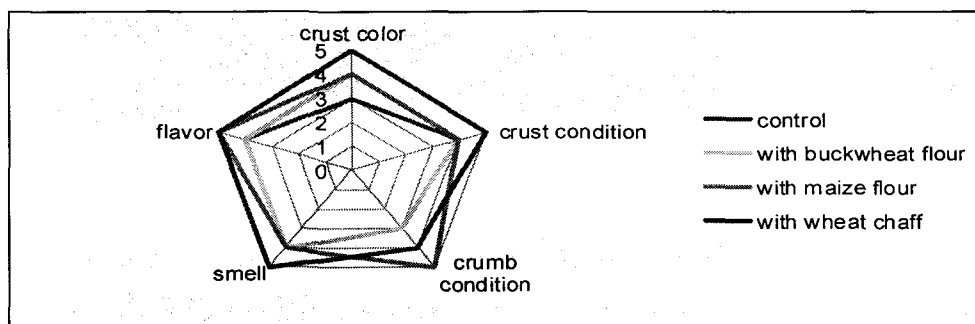


Figure 2. Profilohrama organoleptic quality of finished products

CONCLUSION

Based on research, we can conclude that it is advisable to use buckwheat, corn flour and wheat flour in the production of technologies for the "deferred baking." Corn flour contains more lipids, sugars, hemicellulose, rich in macro and micronutrients (calcium, magnesium, phosphorus, iron and nickel), vitamins E, B1, B2, B6, PP. Buckwheat flour contains zinc, magnesium, calcium, iron, vitamin B, E group and antioxidant rutin (Drobot, 2002). It is well known that wheat flour is a source of dietary fiber that is essential components of food. Adding flour and bran cereal crops enhanced the nutritional value of products. Corn flour contains more lipids, sugars, and hemicellulose. It is rich in macro-and micronutrients (calcium, magnesium, phosphorus, iron and nickel), vitamins E, B1, B2, B6, PP. In the class of carotenoids cornmeal identified carotene, kryptoksantan, zeaksantan. Buckwheat flour

contains zinc, magnesium, potassium and iron, vitamins B and E, antioxidants and rutin. It is known that wheat bran is the source of dietary fiber that is essential components of food. Due to the presence of wheat bran, cornmeal and buckwheat flour in recipes, bakery products can be considered bakery products of functional action.

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