Influences of Confectionary Syrup on Quality of Bakery Products

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***Abstract* —** In this work the influence of confectionary syrup on the quality of bread. It is noted that the use of confectionary syrup in the baking industry will enable to produce bakery products functionality, improved quality, extend the preservation of freshness, as well as increase the biological value of the finished products, and will increase the competitiveness of domestic processing facilities and ultimately - to realize the concept of "healthy nutrition" in the country.

To study the effect of confectionary syrup on the quality of the bread and to establish the most efficient dose trial conducted laboratory batch. The straight dough procedure. The control samples were prepared from flour of the first grade without making the confectionary syrup, experienced test samples were prepared with the introduction of caramel syrup in an amount of 1%, 3%, 5% by weight of flour. The quality of bread was judged by the change in the following factors: the volume of bread, dimensional stability, porosity, shape, swelling ratio crumb organoleptic characteristics. The results showed that the use of dough in the process of caramel syrup contributes to the strengthening of the physical properties of the test and thus improve the quality of the finished bread. It also improves the nutritional and biological value by increasing the content of carbohydrate caramel syrup.

***Keywords* —** baked goods, caramel syrup, the quality of bread, straight dough procedure.

I. Introduction

DUE to the noticeable deterioration of a condition of environment providing the population with good-quality food became a universal problem. Bread - one of the most important food. Therefore, nutritionists emphasize bakery products, as they are characterized by high energy, good digestibility. Low protein content in bakery products from wheat flour the recipe calls for the introduction of dressers that can increase the biological value.

To improve food and biological value of bakery and pastry products developed methods for introducing the recipe high protein lupine flour, protein concentrates from soybean seeds and pea protein containing special additives on the basis of the mushroom, amaranth, etc is found that the introduction of a high-protein dough additives instead of wheat flour contributes to the intensification of the fermentation process and the change of the structure - the mechanical properties of the test: an increase of the water-absorbing capacity, the speed of the formation test, the reduction of its dough slackness. The best quality is achieved in the preparation of bread dough from a mixture of wheat flour and lupine with the introduction of the recipe of sugar, fat and bread improvers in optimal dosages.

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In recent years, with the introduction of clean technologies and integrated processing of agricultural products produced new types of the additional material. These nonconventional raw materials to the baking industry can be applied not only to increase of a nutrition value of bread, creation of new products lechebno – preventive appointment, improvement of the physicist – chemical indicators of finished products, but as and to replacement of traditional additional raw materials.

So high-conversion glucose syrup (GP) is produced by mixing a 1:1 ratio of thick treacle syrup and green (glucose) syrup, purified active powdered charcoal, followed by filtration and evaporate the mixture to a concentration of molasses. High-conversion glucose syrup GPs used instead refinery and starch syrup, and it can be used instead of sugar - sand and refinery molasses for production of bread, "Stolichnogo" and "Orlovskogo" [1].

At the suggestion of new types of food All-Russian scientific research institute of New types of foodstuff and additives (Kiev) was tested substitute of sugar - "Otizon" - the production of bread from a mixture of rye and wheat flour in recipes containing sugar or molasses. Found that the test sample bread "Otizonom" have a mass fraction of sugar (expressed as sucrose) in the 1.7 - 1.8-fold compared with the control bread Otizonom has a sweet taste. Production of bread with a sugar content is reduced from year to year. Recently, high demand products with the addition of valuable pi tatelnyh elements of flour, enriched with vitamins B1, B2, niacin, reduced iron. Production of products with corn syrup and the high content of fructose increased. [2].

As a sugar substitute used whey concentrate (WC) and sugar-beet powder (SBP), which contains about 70% sucrose. SBP is used to replace sugar or molasses, provided formulations, improved varieties of bread from a mixture of rye and wheat flour.

Found that 3% or 4.5% sugar syrup can be replaced by 4.5% SBP without sacrificing physical - chemical

and organoleptic characteristics of bread. Worked out how to make the dough in the SBP that promote its deodorization and clarification in the form of tea leaves, fermented pure culture or in suspension with a partially hydrolyzed sucrose and activated yeast. Establish the possibility and usefulness of WC with a mass fraction of solids of 30, 40, and 50% to replace 1% sugar or molasses, provided recipes. This replacement sposobst ex ists improve nutritional value of bread. [3]

The use of molasses provides significant opportunities to create new types of food prod-ucts. The growth in consumption of molasses envisages the higher requirements for its quality, consumer characteristics and range, because of the need to improve its competitiveness and to meet the requirements for such products of the various population groups.

Relevant is the development of technology for production of confectionary syrup from domestic raw materials and its use in bread production. The use of confectionary syrup in bread production will improve the quality of bakery products, accelerate the dough, to provide the necessary rheological properties of dough, preserve the freshness of bread, increase the variety and quantity of release. The great value has range change by creation of products which on the chemical composition concepts of the balanced food on a ratio of proteins and carbohydrates answer, to the content of irreplaceable amino acids, vitamins, mineral substances and other food elements.

In working out some varieties of bread molasses is used as a component of a prescription, while in the formulation does not specify the form of molasses, which can affect both positively and negatively on the quality of bread. But it should be noted that, despite, previous experimental studies, the problem of influence of molasses on the properties of the test, the quality of the finished product, freshness of bread remain insufficiently studied.

Researches on creation and application in a baking of functional additives are still perspective and will be continued.

II. Research results

The purpose of the real work is uses of caramel treacle in production of bakery products from wheat flour.

In the laboratory, «The Kazakh scientific research institute overworking and the food-processing industry» Ltd Almaty designed to cover technology of bakery and confectionery products, using sugar substitute that improve product quality and production efficiency. As a sugar substitute was selected confectionary syrup. The use of confectionary syrup help to increase the range and quality of bakery and confectionery products, will increase the competitiveness of the the domestic processing enterprises and in final result - to realize the concept of "healthy nutrition" in our country.

To study the effect of confectionery syrup on the quality of bread and to establish the most efficient dosage-focusing conducted laboratory test baking. The straight dough procedure. The control samples were prepared from flour of the first grade without making chamber ramelnoy molasses, experienced test samples were prepared with the introduction of caramel syrup in an amount of 1%, 3%, 5% by weight of flour.

The quality of bread was judged by the change in the following factors: the volume of bread, dimensional stability, porosity, shape, swelling ratio crumb organoleptic characteristics. The table shows the specific volume of bread on the number of introduced by the confectionary syrup. (Table 1 represent in appendix).

It is known that the alcoholic fermentation and gas formation in the test adding relatively small amounts of sugar (up to 10% by weight of flour) stimulating effect. [4] This is because the sugar in the dough quickly inverted into glucose and fructose, preferably fermented by yeast.

III. Conclusion

On organoleptic indicators the bread baked with addition of caramel treacle, differed from control test by bigger elasticity and elasticity, a good leavening of a crumb, uniform, small porosity, a light yellow crust. Caramel treacle promoted improvement of taste and aroma of bread.

The study found that the confectionary syrup enhanced the quality of prototypes of bread, due to improvement in the baking properties of wheat flour.

The findings, presented in the table, shows that when you make the confectionary syrup in the amount of 1,3,5% by weight of flour, an increase in the specific volume of bread by 5, 12, 11% porosity - 0.6, 1 , 8, 0.8%, active acidity increased by 0.01, 0.05, 0.07 units. device, titratable acidity is reduced by 0.4, 1.4, 0.2 deg., swelling ratio of crumb increases to 0, 0.2, 0.

It is established that, bread experiences with addition of 3% of caramel treacle differed the increased specific swelling capacity of a crumb for 0,2% in comparison with control option.

When making the confectionary syrup 3-5% CFU (colony-forming unit) titer after proofing (units / g) increased by one order of magnitude. By results of the conducted researches by optimum option of introduction of caramel treacle in bread 3% are. Thus, the quality of the finished product is significantly increased with the introduction of 3% of the confectionary syrup, also improves porosity of crumb, improves of form-stable capacity, improved organoleptic characteristics, slow down of staling process that allows us to recommend this sweetener to make bread.

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APPENDIX

TABLE I
QUALITY OF SEMI-FINISHED AND BREAD, MADE WITH THE ADDITION OF CONFECTIONARY SYRUP

Quality indicators	Experience option			
	Control	Option 1	Option 2	Option 3
Dough				
Duration of fermentation, min.	180±10	180±10	180±10	180±10
Temperature, ºC	30±2	30±2	30±2	30±2
Humidity, %	42,0±2.0	42,0±2,0	42,0±2,0	42,0±2,0
Acidity, degrees	5,0±0,2	5,2±0,3	5,2±0,2	5,4±0,2
Active acidity (device unit)	5,50±0,40	5,48±0,30	5,27±0,30	5,15±0,30
CFU titer, ed. / G (after distribution racks)	10^7	10^7	10^8	10^8
Bread				
Humidity, %	42,0±2,0	42,0±2,0	42,0±2,0	42,0±2,0
Bread volume, $см^3$	1000±40	1050±50	1120±40	1100±40
Porosity,%	71,8±0,4	72,4±0,3	73,6±0,3	72,6±0,3
Form stability	0,72±0,03	0,66±0,02	0,60±0,04	0,60±0,04
Acidity, degrees	5,0±0.3	4,6±0,2	4,6±0,3	4,8±0,3
Active acidity (device unit)	5,49±0,02	5,50±0,03	5,54±0,03	5,56±0,03
Swelling ratio of crumb	3,6±0,3	3,6±0,2	3,8±0,3	3,6±0,3
Organoleptic assessment	Porosity uniform, taste peculiar	Porosity smaller, uniform, taste more expressed		