

FRUCTOSE AND PROBIOTICS APPLICATION IN TECHNOLOGY OF DIABETES BAKERY

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Polyol alcohols are widely used in the production of bakery products, aimed for the diabetes patients. These alcohols are sweet, have low glycemic index and probiotic potential. Predominantly, this is sorbitol. Lately a major attention has been drawn to the disaccharide of lactulose. Lactulose, similarly to sorbitol, has a sweetness rate of 0,5...0,6 of sugar sweetness, it possesses a low glycemic index, but it is considered a much more effective probiotics than sorbitol. Both sorbitol and lactulose are not fermented by bakery yeast. As sweetener fructose monosaccharide can also be used. It doesn't possess probiotic properties, but can be fermented by yeast.

During our experience we prepared the samples of dough with the sugar contents of 6 % to the mass of flour, the samples with the adequate content of sorbitol, lactulose and with the composition of these sugar substitutes with fructose with the relation 1:1.

It has been determined that the dough with sorbitol and lactulose have a reduced branching of yeast cells, accumulation of biomass. Also their rising potential osmotic sensitivity has reduced. As a result of these the intensity of dough fermentation has lowered.

The dough elasticity measurement carried out with a pharinograf proved that due to the lactulose content the dough elasticity is better.

In case of the sugar substituted with the sorbitol and lactulose mixtures with fructose, the intensity of dough fermentation increases significantly.

The elasticity of dough is also better. The increase of fermentation intensity and dough elasticity as a result of application of sugar substituted compositions help the increase of the products volume and their porosity, especially for products with the compositions of fructose and lactulose.

Addition of nearly 3 % of the flour mass of sorbitol or lactulose determines the contents of 2-3 g of the probiotic in 100 g of product.

KEY WORDS: diabetes products, sorbitol, fructose, lactulose

BREAD FOR HEALTH-IMPROVING

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According to the FAO data, the problem of children's overweight and adult's obesity has escalated for the last 20 years. About 25% of the population in our country has certain diseases associated with overweight. Traditional bread products are low protein and characterized by large amount of easily digestible carbohydrates.

The recipes of protein-groats bread comprising wheat flour, groats flakes (both oats or buckwheat) and dry wheat gluten (DWG) in the amount of 20 % instead of the weight of wheat flour were developed.

Adding flakes improves the rheological properties and shape-stability of dough, increases its water-absorbing and water-holding capacities. It is explained by presence of dietary fibers, pectins and pentosans in their structure. The time of dough development was increased by an average of 6 - 7 minutes which is obviously caused by the slow speed of flakes swelling.

The research showed that adding flakes facilitates the intensification of gas-formation in the dough. Production of cereals presupposes hydrothermal treatment, which leads to partial gelatinization of starch. It helps to improve the splitting of starch by flour amylase and intensity of the fermentation process.

The importance of loosened structure of bread crumb is determined by the ability of gluten network to hold the CO₂. It was proved that increasing portion of flakes in the mixture slightly decreases the gluten ability to retain CO₂, but it doesn't affect the quality of the end product.

Adding flakes enriches bread with dietary fibers, minerals and vitamins. And the presence of DWG allows increasing the amount of groats in the products without impairing their quality, increasing the protein value to a great extent, reducing the amount of easily digestible carbohydrates and lowering glycemic index of bread. The resulting mixture of components provides production of bread for health-improving with increased nutritive and decreased energy value.

KEY WORDS: protein-groats bread, oat, buckwheat