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Gluten-free bread with cereal crops flour

Gluten-free baked goods are intended for patients with celiac disease and they are an important component of the daily diet. Gluten-free ingredients (e.g. starch, flour from cereal crops, food additives) are used in the production of such goods. To improve gluten-free bread's nutritional value, flour from cereal crops should be used in the recipe.

Results of the research of the technological properties of gluten-free starch-containing ingredients have shown that they have low baking properties. Proteins of such ingredients do not form gluten, which provides the formation of the dough structure, their enzyme activity and content of sugars are lower than those in the wheat flour. Due to the low content of sugars in the flour and low activity of amylolytic enzymes there is also a low intensity of alcoholic fermentation in the gluten-free dough. It results in poor expansion and rising of the dough. To ensure the proper process of alcoholic fermentation in the dough, sugar is added. It's found that the required amount of sugar in the recipe should be about 3%, which will provide proper leavening of the dough and the Maillard reaction during baking.

It is confirmed that the optimum indicators of gluten-free bread volume is achieved by adding to the recipe 25 % corn flour, 30 % rice flour or 15 % buckwheat flour.

Best quality bread made with rice flour and the worst quality bread made with buckwheat flour. These results are conditioned by the chemical composition of the flour, the state of the starch (in buckwheat flour it's partially gelatinized), and the flour particles size. The acidity of all samples was low, because the dough is prepared through straight dough method without fermentation.

According to the test results, the use of the flour from cereal crops significantly increases the content in gluten-free bread macro- and micronutrients.