

## **USE OF WHOLE GRAIN WHEAT FLOUR IN CUPCAKE PRODUCTION**

**Borankulova Assel, Soltybayeva Begzada,  
Department of Food production and biotechnology,  
Shambetova Indira  
Taraz Regional University named after M.Kh. Dulati,  
Taraz, Kazakhstan**

Flour confectionery products are in great demand among consumers, despite the limited amount of nutrients required by the human body on a daily basis. Much attention in the production of flour confectionery products is given to the enrichment of products with non-traditional raw materials containing biologically active substances. The disadvantage of cupcakes is high calorie content and low content of fiber, vitamins, and minerals.

The aim of the study was to increase the nutritional value of the cake using whole grain wheat flour millstone grinding.

In the production of the cupcake, wheat flour is used, which in its composition is poorer than whole grain. In whole-grain flour from soft wheat, the entire composition of the grain remains: endosperm, aleurone layer, shell and germ. The shell of the grain contains protein substances, vitamins of groups B, E, dietary fibers, pectins, minerals: phosphorus, calcium, magnesium, iron. The embryo contains vitamins, polyunsaturated fatty acids, amino acids. The core of the grain contains starch and less protein and other nutrients than the shell.

The process of making a cupcake based on the use of flour from sprouted wheat grain and mung bean is practically not studied. At the first stage of research, the production process of a cupcake made with yeast was studied. The course of the technological process and the quality of the cake are influenced by the initial biotechnological activity of the yeast and their ability to adapt to the anaerobic conditions of preparing the sponge. A cupcake was prepared according to the "Spring" recipe. The duration of fermentation is 4-4.5 hours. The humidity of the sponge is 49-52%. The fermentation activity of the yeast at the beginning of the fermentation of the foam is insufficient.

To increase the fermentation activity of yeast, its activation was carried out. To activate the yeast, we used dry brew (swelling flour) and sprouted wheat flour and mung bean in a ratio of 1:1

Baker's yeast was kept in a nutrient medium consisting of water, dry custard, sprouted wheat flour and mung bean in the amount of 1.8-2% by weight of flour in the dough. The amount of dry custard was 0.2-0.4%.

The duration of activation was 40-50 min at a temperature of 30-34°C. The humidity of the mixture is 75-78%. The use of dry custard has a positive effect on the accumulation of maltose in the mixture and therefore increases the activation effect under the action of the composition of dry custard and the enzymatic complex of germinated wheat flour and mung bean.

The addition of dry custard, sprouted wheat flour and mung bean to the nutrient medium to activate yeast, allows to provide nutrition to yeast cells, which are due to the sufficient presence of proteins, carbohydrates, minerals, vitamins and enzymes in the mixture.

If the acidity of the control sponge on activated yeast for 3-3.5 hours of fermentation was 3-3.5 degrees, then in the test sample the acidity was higher and amounted to 4-5 degrees, which made it necessary to reduce the duration of the fermentation of the sponge due to the use of activated yeast to 2.5-3 hours, ensuring sufficient rise of the dough.

Acid accumulation in the sponge of the experimental second sample was similar to that in the control sample.

After the fermentation of the sponge, the dough was kneaded. The humidity of dough of the control sample was 30-32%, the experimental first and second samples were 32-34%. Test temperature 30-32°C. The dough was fermented for a control sample for 1.5-2 hours, experimental 1 - 60-75 minutes, experimental 2 for 1-1.5 hours. The acidity of the finished control dough was 3-3.5 degrees, experimental 1 - 3.5-4.5 degrees, experimental 2 was 3.5-4 degrees.

The research results showed that the structure of the cupcake is affected by the moisture content of the dough. With an increase in the dosage of whole grain wheat flour, it is necessary to increase the moisture content of the dough and products by 2-4%, which is explained by the presence of peripheral grain particles in flour and water absorption capacity. The acidity of products increases with an increase in the amount of whole grain wheat flour, which is explained by the acidity of the flour itself. The fermentation of sponge and dough takes place at a higher acidity compared to dough made from premium wheat flour. The fermentation process of sponge and dough is somewhat intensified with the use of activated yeast. Analyzing the data obtained, it can be concluded that when using whole-grain wheat flour, when preparing a cupcake dough on yeast, the best sample is when the sponge is prepared in the traditional sponge method from premium wheat flour, and the dough from whole-grain wheat flour.