

## **STUDY OF THE INFLUENCE OF SOURDOUGH ON THE QUALITY OF WHEAT FLOUR BREAD WITH STRONG GLUTEN**

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The quality of wheat bread is largely determined by the state of the protein-proteinase complex, which includes proteins, proteolytic enzymes, activators and inhibitors of proteolytic enzymes. Protein substances of flour during kneading and subsequent resting or fermentation of the dough can swell intensively. At the same time, water-insoluble fractions of the protein substance of flour (gliadin and glutenin) form an elastic, plastic, stretchable mass called gluten. Gluten determines the rheological properties of the dough and the structure of the porosity of the crumb of bread. To obtain good quality bread, the content of raw gluten in wheat flour of the highest grade should be at least 28%, and the first grade - at least 30%. However, it is not only the amount of gluten in the dough that matters, but also its quality.

Lactic acid bacteria contained in bread sourdoughs have a certain proteolytic activity, which is due to the action of proteinases and peptidases. The proteinase activity of lactic acid bacteria and yeast can affect the rheological properties of the dough and the structure of the bread crumb. In this regard, to intensify the process of maturation of the dough, improve the swelling of gluten, a promising step is the use of wheat sourdoughs. The purpose of this work was to study the effect of wheat starter cultures on the biotechnological parameters of dough and bread made from flour with strong gluten..

The objects of the study were 7 strains of industrially valuable strains of lactic acid bacteria used for the preparation of dense wheat sourdough and concentrated lactic sourdough (CLS), sourdough, dough and wheat bread, as well as premium wheat flour. The proteinase activity of lactic acid bacteria strains used to breed thick wheat sourdough (TWS) and CLS was judged by the accumulation of amine nitrogen in the nutrient mixture of first-grade wheat flour and water with a moisture content of 80% after 0, 8, 16, and 24 hours. In order to exclude the influence of the spontaneous flour microflora on the growth of amine nitrogen and the action of the flour's own enzymes, two control samples were placed: one without the introduction of pure cultures of microorganisms, in which the "background", spontaneous flour microflora developed, and the second in which the vital activity of the spontaneous flour microflora was suppressed

by introducing toluene (5%), and the accumulation of amine nitrogen occurred due to the flour's own amylases. The value of the indicator in the control samples was taken into account when calculating the amount of amine nitrogen in the experiments.

As a result of the study of the effect of flour quality on the quality of bread (Table 1), it was found that control samples of bread on flour with strong gluten had low acidity, porosity, volume, pale crust, dense crumb with underdeveloped porosity.

Table 1

**Influence of flour quality on the indicators of wheat bread**

The name of indicators	Values of indicators of the quality of bread cooked							
	TWS		CLS		Without sponge		On the sponge	
	when using flour with a gluten deformation index (GDI)							
	45	70	45	70	45	70	45	70
Acidity, deg.	2,0	3,0	1,8	2,9	1,6	2,0	1,8	2,6
Porosity, %	63	80	70	79	51	77	58	79
Specific volume, cm <sup>3</sup> /g	2,6	3,0	3,0	3,0	2,3	2,9	2,4	3,0
Compressibility, units penetrometer AR 4/1	45	75	40	72	28	72	37	75

The use of sourdoughs, especially thick wheat sourdough, made it possible to improve these indicators. The given data testify to the expediency of using thick wheat sourdough and CLS in the processing of flour with strong and short-tearing gluten. In order to improve the quality of the finished product, the effect of starter cultures on the quality of bread made from wheat flour with strong gluten was studied.