

INFLUENCE OF FOOD ADDITIVE - SUNFLOWER LECITHIN ON THE PROPERTIES OF DOUGH FOR MANUFACTURING BAKERY PRODUCTS

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Introduction. The quality of products is largely regulated by the use of food additives of different action. In the bakery industry, lecithins are used as antioxidants and additives which extend the shelf life of products. In addition, lecithin is a phospholipid complex containing phosphatidylcholine (actually lecithin), phosphatidylethanolamine, phosphatidylinositol and other phospholipids, which are recommended for use for persons with diseases of the gastrointestinal tract, which are rapidly spreading nowadays [1-3].

Materials and methods. High-grade wheat flour, salt, yeast and sunflower lecithin were used for the research. Samples were prepared with the addition of 3% of lecithin by weight of flour. This dosage was chosen based on the recommendations for the daily norm of lecithin for people with diseases of the gastrointestinal tract [2]. A sample without lecithin was the control sample. The gas-forming ability of the dough and the dynamics of gas formation were investigated using the device AG-1, the quantity and quality of gluten and the shape-retaining ability of the dough were determined.

Results. It was found that the total gas formation in the dough with lecithin was 864 cm³ per 100 g of dough, in the control sample - 856 cm³. Analysis of the dynamics of gas formation showed the intensification of the released carbon dioxide in the sample with introduction of lecithin (Fig. 1). This can be explained by the presence of choline in lecithin which improves the fermentation ability of yeast, which has a positive effect on the condition of yeast cells.

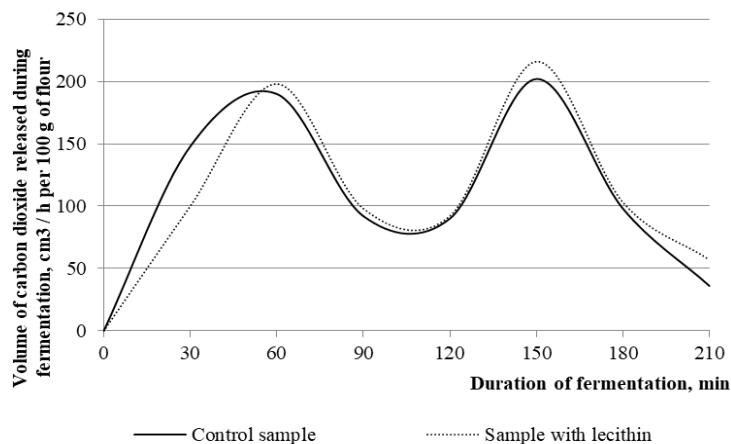


Fig.1. Dynamics of carbon dioxide release in samples, cm³ / h per 100 g of flour

Studies of the quantity and quality of gluten showed a decrease in the amount of raw gluten by 6.7%, dry gluten - by 5.9% (Table 1). This is due to the formation of compounds between lecithin and proteins of flour, which are lost during gluten leaching. The hydration ability of gluten decreases, but slightly, its elasticity decreases, its extensibility increases.

Table 1. Quantity and quality of gluten washed from the dough

Sample	The amount of raw gluten, %	The amount of dry gluten, %	The value of IDG, units	Hydration ability, %	Elongation, cm
control	25.30	8.5	70	195.5	15.2
with lecithin (3%)	23.60	8.0	76	194.8	15.8

It was found that the addition of lecithin causes an increase in elasticity, reducing the dilution of the dough by 3.7%. It indicates the possible formation of complex compounds between proteins of flour gluten and lecithin, which cause changes in the rheological properties of the dough.

Conclusions. An improvement in the fermentation ability of yeast with the addition of lecithin to the dough was established, that is evidenced by an increase in gas formation. The structural and mechanical properties of the dough change, there is some negative effect of the additive on the amount of gluten. However, due to the high content of phospholipids in the composition of lecithin, it is advisable to use it in the manufacture of bakery products for people with diseases of the gastrointestinal tract.

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