

## 1. Structural and mechanical properties of dough with oat bran and phospholipids

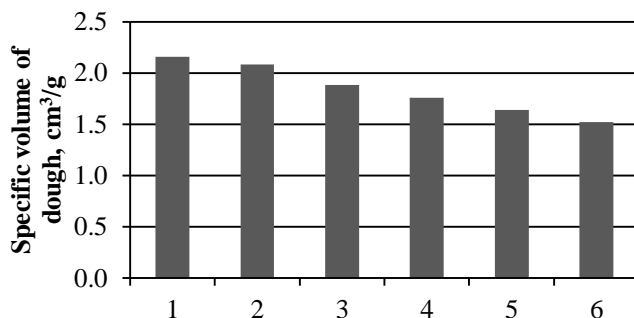
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**Introduction.** In recent years, attention has been paid to the problem of rapid growth of diseases of the gastrointestinal tract, such as irritable bowel syndrome (IBS) [1]. Nutrition and diet are the determining factors preventing this disease. In the diet of patients with IBS fiber intake should increase while combining it with phospholipids.

**Materials and methods.** Oat bran was used as a source of dietary fiber and sunflower lecithin as a source of phospholipids. Their combined effect on the structural and mechanical properties of the dough was determined. Samples of dough from high-grade flour with lecithin (3% by weight of flour) and samples with the addition of oat bran in the amount of 5, 7, 10, 15% to replace wheat flour were prepared. The control sample was sample without additional raw materials. The structural and mechanical properties of the dough were characterized by the gas-holding capacity in terms of the specific volume of dough and the shape-holding capacity in terms of the spread of the dough ball.

**Results.** It was found that the addition of oat bran reduced the gas-holding capacity of the dough by 12.9-29.6% (Fig. 1). This is due to the effect of the components of this raw material on gluten, which loses elasticity due to the high content of dietary fiber, and its ability to retain carbon dioxide is reduced.



**Fig.1. Specific volume of dough:**

**1 – control sample; 2 – sample with lecithin; 3,4,5,6 – samples with lecithin and oat bran 5%, 7%, 10%, 15% to replace wheat flour**

The viscosity of the dough also changed with the introduction of oat bran. It was found that the diameter of the dough ball during fermentation decreased by 22.2-29.6% with increasing dosage of additive. This indicates an increase in the viscosity of the dough system, apparently due to the content of pentosans and high sorption properties of oat components.

**Conclusions.** The formation of complex compounds between starch and gluten proteins of flour with lecithin improved the structural and mechanical properties of the dough. Oat bran is a valuable source of dietary fiber, but due to its negative impact on the content of carbon dioxide in the dough, it is necessary to use technological techniques to obtain high quality bakery products.

### References

1. Weaver K., Melkus G., Henderson W. (2017). Irritable Bowel Syndrome: A review, *The American Journal of Nursing*, 117(6), 48-55.