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Effect of gums influence on the quality of bread made with flour of poor technological properties

Svetlana Palivoda¹, Vera Urchak⁴ and Tatiana Golikova⁴*

¹ National University of Food Technologies, Kiev, Ukraine
* tanyayev@ukr.net

The main problem in bread making in Ukraine today is a processing of poor quality flour (low content and quality of gluten). Systematic research on the use of structure forming food additives for improving quality of bread is currently on going dealing with modified starch, pectin substances, modified cellulose etc. Some studies on the use of gums of herbal origin to prolong storage time of bread as well as for frosted products have been carried out that taking into account their positive influence on water sorption and the rheological characteristics of dough that foresee the use gums in bread making for the improvement of product quality.

Gums of herbal origin – guar gum, tara gum and locust bean gum – have been used and added in dough during kneading in quantity of 0.25 - 0.5% to the weight of flour in water solution. Trial laboratory batches have been implemented: dough had W = 44.5%, temperature of dough was 30±2°C, time of fermentation – 170 minutes. Three types of wheat flour (poor, medium quality and one with strong gluten) were used. Quality of bread was analysed in terms of sensory, physical and chemical characteristics, volume and form resilience.

It has been observed that gums improve texture of dough during fermentation: it is dryer and better forming and the higher effect is in the dough of poor quality flour. Dough from flour with strong gluten results more elastic during fermentation. Gums showed to improve quality of bread: volume increases; higher and more fine porosity of bread than in control sample was observed. When gums were used at 0.5% higher effect on the bread volume was observed (+5.2 - 10.4% and +3.4 - 8.5% in medium and poor quality flour respectively). Addition of 0.5% guar increases form resilience of bread, while other gums have no effect to this characteristic. In total tara gum showed the best positive effect.

The addition of gums of herbal origin in quantity of 0.25 - 0.5% to the weight of flour increase structure of bread pores, elasticity of bread and volume. Tara gum has best positive impact to the bread quality. In case of poor flour and flour with strong gluten bread with gums exerted best quality.

KEYWORDS: gums of herbal origin, wheat flour, quality of bread.