

INFLUENCE OF THE RYE DOUGH MIXING TIME ON ITS FLOW CHARACTERISTICS AND QUAL-ITY OF THE BREAD

N. Bykova, A. Kcharichov

Moscow State University of Food Production

aquamarine-neo@mail.ru

Dough mixing is the most important, initial, technological operation of the bread manufacture, which influences on the passing of all stages of bakery products production. Rye dough structure is coagulation structure, which formed during the process of mixing by the conglutination of the elements of polydisperse system. As against wheat dough there is no crystalline structure, formed by gluten proteins and giving elastoplastic properties to the dough, in the rye dough.

Rye dough structure predetermines special conditions of the choice of the mixing parameters, such as the mixing time and the speed of rotation of dough-mixing machine's kneading blades.

Influence of the rye dough mixing time on its rheological behavior and bread's quality ratings has been studied in this research.

Rye dough has been mixed with certain continuance: 3, 6, 9, 18 and 30 min, then the speed of momentary relaxation of the strains, general deformation have been determined and experimental baking with the following determination of bread's organoleptic and physicochemical quality ratings has been realized.

Estimation of rheological behavior of rye dough and bread's crumb has been conducted using the instrument "Strukturoometr ST-1M".

There have been observations, which suggest, that increase of the continuance of the rye dough mixing from 3 to 30 min causes a growth of its general deformation from 3,4 to 6,3 mm, i.e. of 85%.

Kinetics of change of the speed of momentary relaxation of the rye dough strains depending on its mixing time has been determined.

Bread's samples with the different rye dough mixing time have been baked at 230°C during 30 min. Bread's sample with the mixing time – 18 min – has had maximum crumb porosity – 62%.

Thus, the correlation between rheological behavior of rye dough and bread's quality ratings as well as rational time mixing of rye dough – 18 min, defining value of the speed of momentary relaxation of the strains (0.93 s^{-1}) have been determined.