CONTROL CONSISTENCY OF THE DOUGH FOR RAW CARROT

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Results for rotary viscometry test, cooked in a production environment for some types of biscuits showed that the flow curves obtained at different temperatures (range defined process requirements), in logarithmic coordinates satisfactorily reflected line. This allowed us to assign it to a pseudoplastic rheological behavior and flow curves approximate an exponential function. It was found that for all the recipes consistency coefficient decreases with increasing temperature and depends on the ratio of liquid and solid phases for each test. The index of current is temperature dependent and is constant for each test. However, there is considerable (15%) of discrepancies in several series of experiments, tests for the experiment were taken after various mixtures, but from one zone mixer. Consequently, the characteristics of the consistency of the test vary from batch to batch, which affects the quality molded products.

Gingerbread is a multicomponent system, in which about 50% flour, sugar 25% and the remaining six to eight components of 25%. When implementing a non-continuous process, the exact dosage of each component is very difficult. In this regard, the process of kneading can be carried out continuously, feeding and agitating the three main groups of components: the bulk (flour), viscous (mixture of honey, butter, melange, sugar) and water solution (ammonium, sodium).

This creates a need to study the dependence of structural and mechanical properties of dough from the mixing ratio, which was the aim of this work.

Experiment was designed according to the method of simplex lattices. Prescribed components are presented in the form of three mass fractions of components: X,-share meal,% X2 - the share of the emulsion,% X3 - share an aqueous solution,%. For them, the respected dependence X1 + X2 + X3 = 100%. This allowed us to provide a quotient space in the shape of an equilateral triangle.

The experiment was designed at the local site of the concentration triangle, so that in the investigated variables did not exceed the concentration of the components defined technological boundaries. The investigated area is an irregular simplex, for which the planning matrix was constructed by the method of Mack Lyons and Andersen. As the response function of the adopted coefficient of consistence K.

Methodology of experiments was as follows. A portion of dough kneading in a laboratory mixer with Z-shaped blades for 10 minutes. Submission of an emulsion with a constant in the temperature of 40 ° C provides access to the test temperature of 31 ° C. After kneading the dough is placed in a cylinder in a rotational viscometer "Reotest-2 and measurements were made by conventional methods. According to the results of experiments built flow curves and the coefficient of consistency to the dependence of K on the variables described by a linear equation, whose coefficients are calculated by least squares

$K = 362*X_1 - 189*X_2 - 1210*X_3$.

Increase in the proportion of flour in the dough improves the coefficient of consistency, and increase the proportion of emulsion and aqueous solution - reducing it. And the change of X: and X2 by 1% causes a deviation ratio of 10%. and at the same variation of X3 - By changing to 20%.

Since in practice the humidity component (primarily of the various parties of flour) may differ, then by the above research results, it is possible to calculate the proportion of water, which must be added to maintain the necessary quality for molding consistency of the dough.