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OPTIMIZATION OF THE PROCESS OF THE DISTRIBUTION OF THE COMPOUNDS OF PROTEIN-SOIL FATS OF FRAGRANCES

In order to simplify the production of НБВКРС (protein-carbohydrate semifinished product using carotene-based plant material), we have attempted to study the process of compatible dispersion of their components. For this purpose, the ROBOT COUPE R2 shredder was chosen with a working chamber of 2,9 dm^3 and a blade rotational speed of 1500 rpm.

Changes in the parameters of the MSS (marginal shear stress) and plastic viscosity were studied. According to the research data, the dynamics of changes in rheological indicators of НБВКРС is similar to НБВМ (semifinished protein carbohydrate from carrot mash) and НБВГ (semifinished protein-carbohydrate with mashed pumpkin). When the mass is dispersed in the initial period, when the particles are shriveled to a size slightly lower than the initial and added moisture forms thick layers that facilitate deformation, the size of the MSS begins to increase for НБВМ by 12,2...17,9%, for НБВГ - by 5,3...11,1%, and the plastic viscosity is reduced for НБВМ by 35,1...58,5%, and for НБВГ - by 10,8...16,9%.

The course of these processes in the НБВМ system is 40-50 s, and in the НБВГ system it is 9...10 s, which, in our opinion, is associated with a greater mechanical strength of protopectin and extending the cell walls of carrots compared with similar structures of the pumpkin. With an increase in the duration of dispersion, there is an intense cutting of particles, their total surface is increased, moisture from the free passes into surface-bound. In this period, the magnitude of the boundary MSS increases and reaches the maximum value: for НБВМ – 34,1...38,7%, for НБВГ – 36,3...48.9%, and plastic viscosity decreases to the minimum values: for НБВМ – 63,4... 63,6% and for НБВГ – 35,0...59,6%. The formation of the primary structure of the mass of НБВКРС is over.

With the continuation of the process of dispersion, the splitting of the fibers of the vegetable component occurs, the temperature of the mass continues to increase, the amount of small particles increases, massing leads to secondary structure formation, as well as to the decrease of the size of the MSS: for НБВМ - up to 33,1 ... 34.0%, and for НБВГ - up to 20,8...29,6%, which in future can lead to mass losses in the heat treatment. At the same time, colloid-chemical changes occur - redistribution of particles and moisture adsorption, formation of preservative structures.

Thus, the optimum dispersion time of НБВМ on a ROBOT COUPE R2 shredder with the use of smooth knifes is 70±2 s, with corrugated knives 90±2 s. The optimal dispersion duration for НБВГ is 30±2 s and 40±2 s.

At the next stage, we investigated the dynamic viscosity coefficient of НБВКРС, dispersed with a rattle knife according to the regimes we have chosen. It is concluded that according to the structure of the НБВКРС belong to solid-state food products.

It can be seen from the curves that both food systems have a static marginal shear stress, for 400 mm ± 4 Pa for НБВМ, 300 ± 5 Pa for НБВГ, and a dynamic marginal shear stress of 650 ± 4 Pa and 700 ± 5 Pa. This corresponds to the interval of the MSS, in which plastic semi-finished products can be well formed and preserved in shape.

The maximum boundary viscosity of the undamaged structure is 870 ± 3 Pa · s for НБВМ, 510 ± 5 Pa · s for НБВГ and the minimum viscosity is 98 ± 3 and 105 ± 2 Pa · s.

The results can be used when selecting and designing equipment for the formation and transportation of developed semi-finished products.