RESEARCH FEATURES OF LOW-FAT ICE CREAM MIXTURES STRUCTURING WITH β-GLUCAN AND PECTIN-CONTAINING VEGETABLE RAW MATERIALS

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Abstract: A study of the viscosity-speed characteristics of ice cream mixes was conducted using a rotary viscometer with a "cylinder-cylinder" measuring system. Shear stress τ (Pa) was measured at a temperature of 20°C for twelve values of the shear rate gradient in the range from 3 to 1312 s^{-1} in forward and reverse motion. The research was conducted in 8 samples of ice cream mixes: control №1-2 with the composition of classic hydrocolloids and Cremodan® SI 320, respectively; sample №1-3 with β-glucan in amounts of 0.5, 0.75 and 1.0%, respectively; sample №4-6 with β-glucan (0.5, 0.75 and 1.0%, respectively) in combination with vegetable puree (15%). Analysis of the characteristics of two control and two experimental samples showed that mixes with β-glucan had a slower process of structure destruction. In addition, this process continued until the values of the effective viscosity became almost twice as high - up to 40.1 mPa·s for sample №2 and up to 47.4 mPa·s for sample №5, compared to the control samples №1 and 2 – 25.1 mPa·s and 26 mPa·s, respectively. Mixes of milk and milk-vegetable ice cream can be attributed to systems with a pronounced coagulation structure with the detection of thixotropic properties. The last property is most pronounced for systems containing β-glucan. With this in mind, further research into the technical regimes of the freezing process, especially the duration of freezing and overrun of ice cream mixes with β-glucan, is needed. These processes will be considered in further studies.

Key words: *ice cream, hydrocolloids, mixes, thixotropic properties, vegetable puree, viscosity-speed characteristics.*