9. Technology of multicomponent albumin product

Nikita Soloviov, Alla Tymchuk
National University of Food Technologies, Kyiv, Ukraine

Introduction. The trend towards the creation of multicomponent dairy products with a given composition and properties that meet not only modern medical and biological requirements, but also the traditions and habits of the population remains relevant. Technologies for dairy-protein products have been developed and introduced into production, which include the use of cereals of various processing levels, fruit and berry fillers in the form of puree, extracts of wild plants, etc. Taking into account the above, it is important to improve the technology of a multicomponent albumin product with the addition of Jerusalem artichoke syrup.

Materials and methods. The following components were selected as formulation components: Jerusalem artichoke syrup (TU U 10.8-2368107711-001.2017), milk protein concentrate obtained by the method of thermoacid precipitation of whey proteins of cow's milk (DSTU (National Standard of Ukraine) 4458:2005).

The raw material for the production of dairy-protein concentrate is whey with the following physicochemical parameters: mass fraction of solids 6.1±0.3%, including protein 1.0±0.05%, fat 0.1±0.01%, milk sugar 4.5±0.2%, minerals 0.5±0.02%, titrated acidity 18±2 °T, density 1018 kg/m3. Thermoacid coagulation was carried out at a temperature of 90±2 °C and a duration of 80±2 min at pH 4.4...4.6. The consistency of Jerusalem artichoke syrup was determined by a modified method used to characterize honey. Jerusalem artichoke syrup contains 100 g: carbohydrates - 65.5 g, including 4.5 g of dietary fiber, ash - 1.4 g. Caloric content is 267 kcal (1118 kJ).

Results. The conditions of introduction and the optimal dose of vegetable filler into dairy-protein concentrate were determined, taking into account the increased viscosity of the syrup. Changes in the consistency of Jerusalem artichoke syrup at different temperatures from 20 °C to 65 °C were studied.

The choice of the optimal dose of syrup was based on the principle of preserving the organoleptic characteristics characteristic of traditional albumin products. The range of filler content was from 5.0 to 14.0%. In the model samples, an intense color change from light to dark cream was observed. Chopped nuts were used to improve the taste properties of poly-component albumin products. Their addition gives the product a pleasant taste and aroma, emphasizes the addition of Jerusalem artichoke flavored syrup, and additionally enriches the product with vegetable proteins, carbohydrates, vitamins, pectin, fiber, and minerals. The technological process for the production of a multicomponent albumin product includes the following operations: raw material preparation, batch preparation, and mixture processing. All components according to the recipe - dairy-protein concentrate, Jerusalem artichoke syrup, and nuts - were mixed for 5 to 10 minutes. Then it was cooled to a temperature not exceeding (4±2) °C.

The effect of the syrup on the shelf life of the finished product was studied for 72 hours. An albumin product without Jerusalem artichoke syrup was used as a control. During storage, a slower increase in titratable acidity was observed (≈ 2 °T per day).

Conclusions. Jerusalem artichoke syrup is sufficiently technological and can be recommended for the production of various multicomponent albumin products subject to adjustment of its amount. The optimal dose of the syrup is 8.0...11.0%. It was found that before adding to the dairy-protein concentrate, Jerusalem artichoke syrup should be heated to a temperature of 60±5°C to achieve a liquid consistency. This contributes to better mixing of the recipe components.