

Prospects of Using Safflower Oil in the Creation of Food Emulsion Products

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Abstract

The development of functional food products based on vegetable oils is one of the promising directions in modern food science and technology. Safflower oil (*Carthamus tinctorius* L.), distinguished by its high content of polyunsaturated fatty acids, tocopherols, and antioxidant compounds, was used as the main fat base in the creation of two emulsion functional products: high-calorie mayonnaise and a sauce with garlic and ginger. Experimental batches were produced under laboratory conditions using standard mixing and homogenizing equipment. Formulations were developed taking into account the optimal ratio of fat, protein, and carbohydrate components, and included natural additives with functional properties (garlic, ginger, ascorbic acid), which made it possible to enhance the nutritional and biological value of the products. For each variant, a technological scheme was developed to ensure emulsion stability and extended shelf life. Physico-chemical, rheological, and organoleptic characteristics were evaluated. Rheological studies revealed differences in the structural behavior of the products: mayonnaise exhibited pseudoplastic flow with high viscosity (2000–5000 mPa·s) and pronounced thixotropy, while the sauce was characterized by viscoplastic flow and moderate viscosity (800–1500 mPa·s). Physico-chemical analysis showed acceptable values of acid and peroxide numbers, confirming the stability of the fat phase. According to the results of sensory evaluation conducted by an expert panel of 20 specialists, both products received the “excellent” category, with the sauce containing ginger and garlic receiving the highest approval. Thus, the use of safflower oil in the development of emulsion products enables the creation of functional foods with high biological value, stable quality characteristics, and strong consumer appeal, confirming the feasibility of their industrial implementation.

Keywords

Safflower Oil, Functional Food Products, Mayonnaise, Sauce, Emulsion Systems, Physico-chemical Indicators, Rheological Properties, Organoleptic Evaluation