



## INTRODUCTION

One way to implement the global program for sustainable development and ensure adequate nutrition for the population is by creating mass-consumption products, minced meat products utilizing sources of various biologically active compounds. Polyunsaturated fatty acids from sunflower oil, along with polyphenolic complexes, antioxidants, and dietary fibers of fenugreek (*Trigonella foenum-graecum* L.) and black currant leaves (*Ribes nigrum* L.), allow these plants to be utilized as potential nutraceuticals in meat products. In addition to enhancing the nutritional and biological value of the products, it is particularly important to improve their functional and technological properties, sensory evaluation, reduce losses after heat treatment, and extend the shelf life of the products. The use of sunflower oil in the composition of meat products is relevant because it can contribute to increasing the digestibility of the protein of meat products.



## METHODOLOGY

**Materials.** Fenugreek (*Trigonella foenum-graecum* L.) and dried leaves of black currant (*Ribes nigrum* L.) (DLBC). Minced meat and minced meat products with sunflower oil and plant supplements (fenugreek or dried black currant leaves) and without plant supplements.

**Methods.** The stability of minced meat emulsions (SE) with sunflower oil and fenugreek or sunflower oil and DLBC was evaluated based on the mass fraction of the intact emulsion, which lost a certain amount of moisture and fat after heat treatment at a temperature of 75–80°C for 60 minutes. The water-holding capacity and fat-holding capacity were calculated based on changes in the mass fraction of moisture and fat in minced meat before and after heat treatment. Heat treatment of samples of semi-finished minced meat was carried out according to the following parameters: baking temperature in the oven – 150-160°C, baking duration – 15-20 minutes, steaming – at a temperature of 98-100°C, cooking duration – 10-15 minutes. Heat treatment was carried out until the temperature in the center of the product was reached (90±1)°C.

## RESULTS AND DISCUSSION

Table. Functional and technological properties of minced meat with Plant Supplements

Indicator	Control	Plant Supplements			
		DLBC (0,75%)	DLBC (1,85%)	Fenugreek (0,75%)	Fenugreek (1,85%)
Moisture retention capacity, %	64.0±0.3	65.7±0.3	66.0±0.3	66.5±0.3	67.2±0.4
Fat retention capacity, %	13.9±0.2	15.9±0.2	16.8±0.2	16.9±0.2	17.1±0.2
Emulsion stability, %	83.3±0.3	90.1±0.4	91.3±0.4	90.6±0.3	92.2±0.3
Thermal processing losses, %					
Steamed	20.8±0.4	18.7±0.3	18.1±0.2	17.6±0.3	16.8±0.2
Baked	20.2±0.3	18.2±0.2	16.4±0.3	16.9±0.3	15.5±0.2

The protein content of ready-made meat products with plant supplements was 16.5-18.5%. The products contained vitamins E, A, β-carotene, and minerals such as sodium, potassium, calcium, magnesium, phosphorus, zinc, copper, and iron. Due to the use of fenugreek, the iron content increased from 1.27±0.03 mg% to 1.71±0.04 mg% and 2.14±0.04 mg%.

## CONCLUSION

Results of experimental studies of functional and technological properties, losses after heat treatment, acid and peroxide values, sensory evaluation, microbiological indicators, general chemical composition, energy value, analyzed biological value of minced meat products with fenugreek, black currant leaves indicate that the production technology has improved of minced meat products ensures the production of healthy products that can be recommended for the nutrition of people with metabolic disorders. The created products can be characterized as health products that can be recommended for adjusting the diet of the population.