NEW FOOD PROTEIN NANOCOMPOSITES FOR EMULSIFIED MEAT PRODUCTS

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The requirement of the consumer market is the manufacture of meat products of available price segment with a traditional organoleptic characteristics: not only the color, taste, aroma, but texture, all well. A compromise solution in this area is the use of structure-forming plant additives in meat technology [1].

For intensification of structure formation in the combined meat-vegetable systems is prospectively the use of biocatalysis. The enzyme transglutaminase (TG) catalyzes the reaction of acyl migration, introducing covalent ε-(γ-glutamyl)lysine links between proteins and producing polymers of high molecular weight [5]. Modification of proteins by TG allows you to change their solubility, hydrating, thermostability, and their gelling, rheological properties, emulsification and rennet coagulation in the case of dairy products [2, 4].

Thus, the urgent task is to develop new food protein nanocomposite for use in technology of emulsified products. Elements of the new concept for the creation of combined meat products on the basis of emulsions are alternative herbal ingredients and processing methods of enzymatic processing of combined food systems with transglutaminases.

As objects of research we used poultry of mechanical deboning, mid-back, semifat trimmed pork, pine flour obtained by grinding the seeds of the lupine varieties of Desnianskyi selection GNU Institute of lupine (Bryansk), an enzyme (TG) transglutaminase "REVADA TG 11" (BDF Natural Ingredients, S.L., Spain). For the foundation, acting as control, was used minced meat loaf “Zakaznoi”. We studied functional and technological properties of the model minced meat with 50 %

replacing of the basic raw material by mechanically deboned chiken meat with the addition of lupine flour in the amount of 0-10 % and commercial enzyme preparation REVADA TG 11 in the amount of 0.1 to 1.1 % to the weight of meat.

For displaying the enzymatic effect the stuffing was maintained at a temperature of +2°C for 24 h [3]. It is established that the control samples had loose, pasty consistency, and experienced - tight and elastic. The maximum values of moisture-binding and water-holding capacity are for 85.5 and 78.5%, respectively. They are achieved with the introduction of hydrated flour in the stuffing in the amount of 5.0 % and enzyme preparation in the amount of 0.3 %. Thus the mass yield of product is increased from 110 to 120 %, the products are characterized by high juiciness.

On the results of these surveys was developed the formulation and technological scheme of the production of meat loaf, and was carried out the experimental-industrial production of meat loaf "Liskinsky" on the basis of the Individual Enterprise “Protein-Voronezh” using 5 % lupine flour and 0.3 % enzyme preparation TG to the weight of the main raw material. Control sample was developed with the addition of 1 % egg protein as the gelatinizer. The results of the complex physico-chemical, technological and organoleptic studies have shown that experimental samples of meat loaves made with vegetable protein and enzyme preparation transglutaminase "Revada TG 11", were the same on main indices as control products, and according to a number of indices had the advantage. A positive test result was the increase of the yield of meat loaves up to 120 %due to the increase in the mass fraction of protein due to the introduction of lupine flour and enzyme transglutaminase.

Thus, the new food protein nanocomposites with the use protein-glutamine γ-glutamyltransferase enable the efficient use of low-grade meat and alternative vegetable raw materials in technology of emulsified products with high nutritional and biological value.

Reference

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