

IMPROVEMENT OF PRODUCTION TECHNOLOGY OF MEAT PRODUCTS

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Summary: To produce meat and mixed products having high protein content it is essential to make full use of meat industry second raw products namely, second grade by-products. Chemical and amino acid composition studies as well as microbiological researches have confirmed advantages of using second grade by-products for production of protein mass, emulsions and powders that can be used in sausages and half-finished products.

Materials and Methods: Chemical structure, physico-chemical properties of second grade by-products and their organoleptic combination have been studied. On the basis of the data taken recipe and technology for protein mass production from lungs have been developed. To produce protein mass lungs are washed, trimmed and then cut. Holes of meat grinder plate have a diameter of 2-3 mm. The following proportions should be observed: lungs-70; cook water -25,3; melted hog fat-4,7; salt-3. To prepare protein-fat emulsion it is necessary to mix intensively cook water obtained as the result of by-products cooking at temperature 75-80 °C in homogenizer for 120-180 seconds. The ready-cooked emulsion is a homogeneous mixture of milky colour without foreign flavour. To determine the influence of the added dose (5, 10, 15 %) of protein mass on the finished products quality, sausages, frankfurters and cooked sausages have been produced. Generally accepted methods have been used for appraisal of quality of sausage meat and of finished products.

Results: Emulsion and protein-fat mass produced contain: water 78,2; 76,3; protein- 5,4; 12,2; fat-10,2; 7,8; ash-1,2; 2,2. Protein mass functional qualities depend upon raw products, autolytic changes, recipes, homogenization, etc.. All these factors influence protein properties and thus determine the physico-chemical characteristics of finished products. Water-consuming and water-retaining capacity of raw products having been studied it was determined that fresh lungs have elastic structure and their water-binding capacity is minimal. Storage doesn't cause any noticeable change. But protein mass being added water-consuming and water-retaining capacity of lung tissue changes greatly. Protein mass contains the whole complex of amino acids and all essential amino acids. The content of some essential amino acids is rather high, (lysine-5,106; leucine-5,439; valine-6,344; threonine- 3,322; phenylalanine-3,221). The experiments have shown that protein mass additive in cooked horse sausage meat in proportion 10% per weight of raw product gives increased and stable yields. This can be explained by higher water binding capacity of sausage meat that lowers evaporation during thermization and cooling of sausage. Ten per cent protein mass additive increases the content of solubles in sausage meat. Hence the content of soluble proteins standing as a binding component in sausage meat is increased as well. Organoleptic indices are the best when the amount of added protein mass makes 5%-10%. Nitrite traces are no more than 2,9 mg%. Added protein mass increase promotes to some extent decrease of nitrite of soda content. Digestibility is 17%-22% higher. The data obtained have shown that protein complex being used for sausage production, the yield and organoleptic indices of the finished products are improved. Using protein complex it is possible to promote formation of volatile substances and thus to influence biochemical and physico-chemical processes causing accumulation of compounds improving flavour and aroma of finished products. Researches made have shown that water-binding capacity of sausage meat grows when the amount of

protein mass additives makes up to 10-15%. This increase is caused by the growth of the amount of soluble proteins which function as a binding component and thus decrease water loss during thermization. The lowering of the nutritional quality of the finished product has not been observed.

Conclusion: The technology for protein - fat mass cooking is simple and raw products are available. These factors make it possible to extend both raw products supply and assortment of meal products. Protein-fat additives make it possible to get the exact composition of products and to produce finished products of required structural-mechanical properties. Protein and fat additives emulsifying provides even distribution of emulsion in sausage meat and permits using of dietary fats. In this case fat is not separated off sausage meat and hence no fat-pockets can be formed. The use of stable protein fat emulsion in sausage products attracts attention because of high digestibility of emulsified fat.