

IMPROVEMENT OF BIOLOGICAL VALUE OF PRODUCTS FROM COMBINED STUFFING PRODUCTS

СОВЕРШЕНСТВОВАНИЕ БИОЛОГИЧЕСКОЙ ЦЕННОСТИ ИЗДЕЛИЙ ИЗ КОМБИНИРОВАННЫХ ФАРШЕВЫХ ПРОДУКТОВ

КОМБИНИРЛЕНГЕН ФАРШТЫ ӨНІМДЕРДІҢ БИОЛОГИЯЛЫҚ ҚҰНДЫЛЫҒЫН АРТТЫРУ

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This article presents the results of the development soft combined stuffing products from camel meat with fillers for the purpose of improvement and biological value of the product. During research influence of dose of protein additive is set on physical and chemical properties, organoleptic characteristic and practical value of product. Developed recipes may be recommended for production of new food products.

В данной статье представлены результаты разработки комбинированных мясо-фаршевых продуктов из верблюжьего мяса с использованием наполнителей для повышения пищевой, биологической ценности продукта. В ходе экспериментальных исследований установлено влияние дозы белковых добавок на физико-химические свойства, органолептическую характеристику и практическую ценность продукта. Разработанные рецептуры могут быть рекомендованы для производства новых продуктов питания.

Бұл жұмыста түйе етінен өндірілетін комбинирленген етті-фарш өнімдеріне толықтырғышты қоспаларды қосу арқылы тағамдық, биологиялық қасиетін арттыру жолдары көрсетілген. Эксперименталды зерттеулер арқылы етті-фарш өнімдеріне қосылатын ақуызды қоспаның ұтымды мөлшері анықталды және қосылған қоспаның өнімнің физико-химиялық, органолептикалық қасиеттеріне және практикалық құндылығына тигізетін әсері зерттелді. Дайындалған рецептураларды жаңа тағам өнімдерін шығаруда ұсынуға болады.

Keywords: camel meat, stuffing, additive, protein enricher, structures.

Ключевые слова: верблюжье мясо, фарш, добавка, белковый обогатитель, свойства.

Негізгі сөздер: түйе еті, фарш, қоспа, ақуыз байытқышы, қасиеттері.

Introduction

On the grounds of data native and foreign literature on such questions as the value of animal protein in the human nutrition, nutrition value of meat, using different additives in the production of combined meat products, to the state of harmful substances, also modern requirements of nutrition science to food, we can do next conclusions:

1. Changes of the working and living conditions of people require the creation of innovative products with a high content of protein, vitamins and mineral substances for the maximum satisfaction of the physiological needs of the organism.

2. From food substances, required for satisfaction the physiological needs of human organism, the most valuable product is animal protein, because it has the best set of amino acids, and better absorbed by the human body.

To obtain products with high nutritional value, the processes based on a biotechnology are used in processing industry. At technological processing of animal raw materials integrity of cell is broken, but enzymes in cells stay in active state and cause biochemical changes, contributing its transformation into prepared products and give them a specific taste, flavor, keep it fresh long time.

Objects and methods of Research

Preparation of formed meat product does not involve operation of separating boiled meat from bones manually as it takes place when making jellied meat which is associated with significant microbial contamination and thus long-lasting boiling (20-25), therefore boiling of meat mass during 5-7 min. is sufficient and it

facilitates better storage of the product. If the product is prepared using fillers, they are added by boiling of meat mass [2].

In our case, we took protein-fat emulsion as the filler.

Option of preparation 1. To obtain 1 kg of formed meat product we take 1.26 kg of cutlet camel meat from where fat deposits shall be preliminarily removed, then wash it, grind it in meat grinder to pieces weighing 3 g, add 140 g of water, boil it at slow boiling for 60 minute. 15-20 minute before boiling finishes we add salt, pepper, black peppercorn, 5-7 minutes before – bay leaf, pour off the broth, remove fat, filter out. We add powdered black pepper to boiled meat and 45 g of filtered broth. The mass shall be boiled for 7 minutes. We add 101 g of broth to the stuffing or 11% to the boiled mass, smooth a surface simultaneously compacting the entire mass and transfer for cooling down and forming. The obtained product has good taste, dense structure and the required yield.

Option of preparation 2. This method is carried out similarly to the option of preparation 1 but grinding shall be carried out to obtain pieces of 15 g, we add 102 g of water which is 10:0.8 and boil for 90 min. We add 24 g of broth to boiled meat. We pour 82 g of filtered broth to the stuffing. The obtained product meets taste qualities, has dense structure, it is easy to cut and has the required yield.

Option of preparation 3. This method is carried out similarly to the option of preparation 1 but we grind boneless meat to pieces of 2 g, add 88 g of water, boil for 70 minutes, and add 14 g of broth to boiled meat. We pour 55 g of filtered broth to the stuffing or 6%. As a result we obtain structural mass as the raw meat was excessively

ground and added insufficient water that resulted in underboiled meat with such boiling mode in form of separate pieces where water was boiled away.

Cut meat products prepared with protein enrichers have more balanced composition of amino acids, high degree of digestibility and are recommended for wide use in production of cut meat products.

Study of functional properties of stuffing with protein enrichers showed that stuffing has pH value of the media where humidity adhesive and water retention capacity, yield and product humidity are increased.

Analysis of experimental data shows that adding protein enrichers has significant effect: humidity adhesive capacity is increased, significant increase of consistency can be observed due to shredding and destruction of muscle fibers, the yield is increased.

One of the most important physical and chemical features characterizing the quality of cut meat products is the humidity adhesive capacity of stuffing to bound humidity tightly.

Humidity adhesive capacity was defined by separation of free humidity using pressing.

Humidity adhesive capacity is characterized by the content of free and bound humidity, quantity of meat fluid, area of humid spot. The use of protein enrichers instead of beef in the recipe of stuffing has favorable effect on change of qualitative features of protein system, especially increase of soluble protein content.

Introduction of stuffing instead of natural meat 10–15%. Protein enricher increases quantity of bound humidity up to 2,0-4,0% compared with control.

Results and Discussion

Capability of meat stuffing to bound humidity in the process of heat treatment was studied by defining loss of humidity in boiling, cooling down and yield of final product.

Protein enricher has positive effect on humidity adhesive and water retention capacity of stuffing. And finally it has great importance for obtaining high yield, improvement of consistency, increase of juiciness and tenderness.

Losses of mass in experimental stuffing decrease and are 5,4 to 6,0% for experimental samples with change 10% and 15% of meat with the value in control of 6,2% (Fig.1).

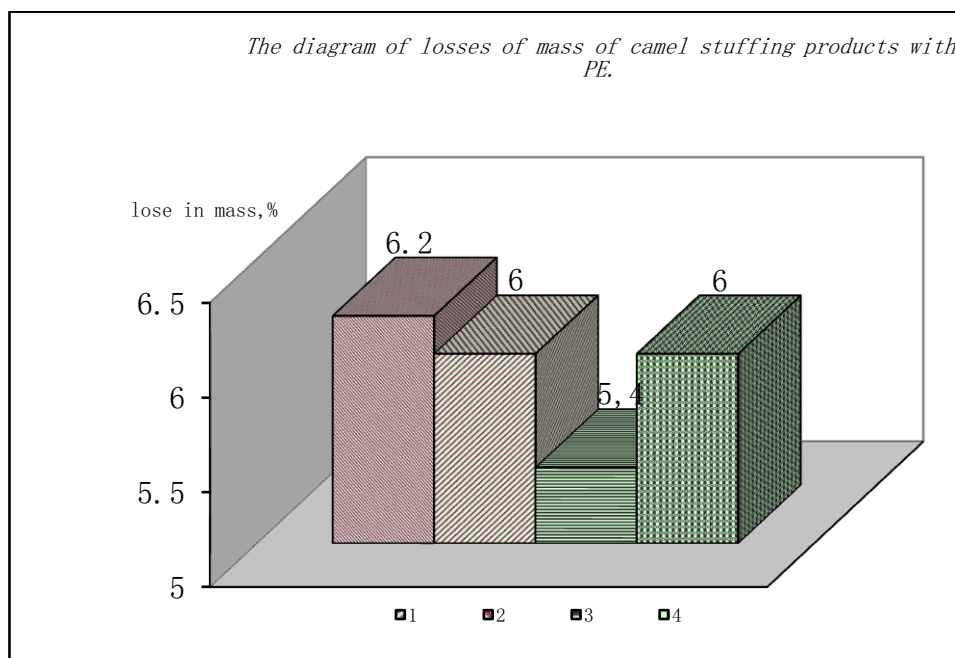


Figure 1. The diagram of losses of mass of camel stuffing products with PE.

1. Camel stuffing products control.
2. Camel stuffing products with 5% PE.
3. Camel stuffing products with 10% PE.

4. Camel stuffing products with 15% PE.

These changes in turn show effect on humidity of final product and yield. It can be concluded that protein enrichers have high nutritional value that allows improving quality of cut meat products.

Definition of optimal condition of cutting of meat stuffing containing protein enricher allowed defining the effect of protein enricher on structural and mechanical properties of stuffing depending on quantity of introduced addition.

To define the effect of protein enricher on the quality of stuffing and final products we have studied yield value as well as plastic viscosity and stickiness. Yield value is more sensitive to change of process factors, therefore addition of protein enricher in cutting leads to increase of water retention capacity of stuffing, humidity and yield of final product. Change in humidity modifies structural-mechanical properties with constant values of temperature and grinding degree. Increase of humidity leads to decrease of yield value and plastic viscosity.

With the increase of humidity adhesive capacity the yield value, plastic viscosity and stickiness will decrease. However, the nature of change in yield value and plasticity is different. At that, introduction of protein enricher to stuffing with the increase of change will lead to significant increase of its strength properties, improvement of plasticity.

Conclusion

Summarizing the results of experimental research on development of technological processes for production of camel meat products using protein enrichers, it was determined that newly developed meat products are notable for sufficiently high organoleptic and nutritional advantages and can be recommended for use for industrial purposes.

We continue working on clarification of effects of other factors on the quality of raw products and final products.

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