

УДК 637.523.2

GERODIETIC MEAT PRODUCTS TECHNOLOGY

Halenko O.A., c.t.s, PhD

National University of Food Technologies, Kyiv, Ukraine

At the end of the twentieth and the beginning of twenty first centuries the scientists of economically developed countries and countries that are developing became interested in gerontology (the study of the aging processes and factors which determine life expectancy of the people of advanced age, in particular the problem of nutrition in old age).

25% of citizens of Ukraine are pensioners, and 20% are more than 50 years old. Ukraine is on the eleventh place in the world among the countries with the share of citizens older than 65 years (Belarus - 23 place, Russia - 27). Statistics shows that the percentage of people of advanced age in Ukraine is 20.5%. The Institute of Gerontology of the Academy of Medical Science of Ukraine predicts that in 2026 it will be 26%, 2050 - 38%.

Main factors which cause fast ageing are:

- social: low level of income; lack of knowledge about basic characteristics of food products; insufficient level of medical aid; low level of social protection of citizens, and chronic stress;
- ecological: contamination of water, soil, air, and food products;
- incorrect way of life: bad habits; defective nutrition; insufficient afferent activity; incorrect work and rest regime;
- infections.

The pioneers in creating of balanced gerodietic products are: Antipova L.V., Bohatyriov A.N., Kozlovska S.H., Zaytsev A.N., Kasianov H.I., Samsonova M.A., Hrihorov Y.H., Povorozniuk V.V., Chebotariiev D.F., Nechayev A.P., Lipatov N.N., Pokrovskiy A.A., Skurykhin K.M., Uholiev A.M., Ustynova A.V., Kharytonov V.D., Shazzo R.I. etc.

The urgent problem of present time is a deficiency of calcium in daily ration, that is why different scientists are looking for ways to enrich food products with calcium.

We are conducting researches on a possibility of using mineral additives made of mussel shells, rapana shells, and quail eggshells in a production of gerodietic products, specifically boiled sausages.

To enrich meat foods scientists [Faivyshevskiy M. L., 1998; Khabryna K. E., 1999; Ustynova A.V., 2000] suggest using natural sources of calcium: bone marrow meal, algin acid salt, bone paste.

The source of bioorganic calcium compounds is dietary bone, which is gathered on meat processing plants and is not used for nutrition as a source of calcium. Beliayev M.I., Cherevka O.I., Faivishevskiy M.L., Honcharov H.I., Vinokurova H.A. investigated a technology of extraction of protein, fat, bone marrow and obtaining of meat out of bone stuff. In 2004 Holovko M.P. developed a method of processing a semi-finished product out of dietary bone of the cattle. This semi-finished products may be used for production of ground meat products enriched with bioorganic calcium compounds.

The food industry of Japan more than 20 years is using different methods of production of meat foods enriched with calcium by adding grounded animal bones into cutlet mince, schnizels, and sausage products. The food industry of USA conducts researches on creating of a protein mineral additive made of bone and bone leavings. In United Kingdom dietary bone is processed by Johnson-Faudler method to obtain food fat, soluble protein and food phosphate.

When developing a technology of sausage products using mussel shells, rapana shells, and quail eggshells, it is essential to identify its structure, structural changes of model sausage meat and finished sausage products. The usage of the precise chemical, physicochemical, histological and biochemical methods allows to obtain information about quality of meat foods. Microstructural researches make it possible to analyze not only the integral structure of product, but also changes which occur in separate components of the objects under investigation, it also helps to differentiate peculiarities of different tissue and cellular structures. That is why the aim of our investigation was to study the possibilities of using mussel shells, rapana shells, and quail eggshells, in technology of boiled sausages, investigating microstructure of model sausage meat and finished sausage products.

For production of sausages the receipt of boiled sausage «Stolova» is used in accordance with DSTU 4436:2005. In created receipts we substituted 5 to 20% of 1st sort beef with a dietary nutritional supplement. The modeling of receipt components and its percentage was made with a help of a computer program BIO.2.

After the analysis of different kinds of receipts it was stated that the increase of amount of nutritional supplement will not balance the aminoacids and mineral components of a product, and the minimal amount will not balance calcium and phosphorus. By modeling the maximum value of the coefficient of utility of aminoacids and the ratio of protein: fat : mineral elements, we have chosen 4 receipts of sausage meat for boiled sausages.

Table 1 – Receipts of boiled sausages with different content

The name of components	The amount of bone paste, %				
	«Stolova»	5	10	15	20
1 st sort beef	49	44	39	34	29
Mild fat pork	50	50	50	50	50
Dried milk	1	1	1	1	1
Nutritional supplement	-	5	10	15	20

We have determined that it is not practical to use more than 40% of beef in meat products, because the cost increases, the product became more tough and the level of digestion decreases. The concentration of beef less than 35% does not balance aminoacid components. Thus the most optimal content of nutritional supplement is 10%.

Conclusion.

The results of previous physicochemical and organoleptic investigations showed that bone paste can be used in the food industry.

The investigation of the microstructure of sausage meat and finished boiled sausages produced using model receipts, shows that addition more than 15% of nutritional supplement to the content of the product results in powdery structure of finished sausages.

It is proved that the optimal amount of the bone paste in finished product is 10%.

References

1. Richardson D.P. (2002), Functional Food and Health Claims, The world of Functional ingredients, 9, pp. 12–20.
2. Peshuk L., Galenko O. (2014), Rational use of the collagen, Ukrainian Journal of Food Science, 2(1), pp. 361–370.
3. Hutchison C.L., Mulley R.C., Wiklund E., Flesch J.S. (2012), Effect of concentrate feeding on instrumental meat quality and sensory characteristics of fallow deer venison, Meat Science, 90(3), pp. 801–806.
4. Radzievska I., Melnyk O., Galenko O. (2018), Two-stage technology for palm oil fractionation for production of cocoa butter substitutes Nauka innov., 14(1), pp.40–49.
5. Peshuk L., Galenko O. (2011), Gerodietic meat products technology enriched with calcium and phosphorus, Food and Environment Safety, X(4), pp. 18–23.

**ВЛИЯНИЕ МУКИ ИЗ СЕМЯН ЛЬНА И ЧЕРНОСЛИВА
НА КАЧЕСТВО ТВОРОЖНОЙ МАССЫ**

Гиноян Р.В., д.с.-х.н., профессор

НГСХА, г. Нижний Новгород, Российская Федерация

Разработка и внедрение в производство функциональных продуктов входят в перечень приоритетных задач государственной политики России в области здорового питания.

Особое место в традиционном пищевом рационе населения принадлежит творогу и творожным продуктам, что обусловлено регулярным потреблением и доступностью для всех социальных и возрастных групп населения [1].