

References

- Bauermeister A.M., Sargent J. R. 1979. Biosynthesis of triacylglycerols in the intestines of rainbow trout (*Salmo gairdnerii*) fed marine zooplankton rich in wax esters // *Biochim. Biophys. Acta*. V. 575. P. 358–364.
- Chentsov Yu.S. 2004. Introduction to Cell Biology: University Textbook. – 4th edition, revised and expanded. / Moscow: Akademkniga publishers. P. 219–276. [in Russian]
- Hansen J., Berge J.M., Hillestad M., Krogdahl A., Galloway T.F., Holm H., Holm J., Ruyter B. 2008. Apparent digestion and apparent retention of lipid and fatty acids in Atlantic cod (*Gadus morhua*) fed increasing dietary lipid levels // *Aquaculture*. V. 284. № 1–4. P. 159–166.
- Jamieson G.R. 1975. GLS-identification techniques for longchain unsaturated fatty acids // *J. Chromatogr.Sci.* V. 13. № 10. P.491–497.
- Korosov A.V., Gorbach V.V. 2010. Computer-aided Processing of Biological Data: Manual / Petrozavodsk. Petrozavodsk State University publishers. 84 p. [in Russian]
- Leaver M.J., Bautista J.M., Björnsson T.B., Jönsson E., Krey G., Tocher D.R., Torstensen B.E. 2006. Towards fish lipid nutrigenomics: current state and prospects for fin-fish aquaculture comparative // *Biochemistry and Physiology A-Molecular & Integrative Physiology*. V. 145. P. 258–267.
- López L.M., Durazo E., Viana M.T., Drawbridge M., Bureau D.P. 2009. Effect of dietary lipid levels on performance, body composition and fatty acid profile of juvenile white seabass, *Atractoscion nobilis* // *Aquaculture*. V. 298. № 1–2. P. 101–105.
- Okumuó O., Mazlum M.D. 2002. Evaluation of commercial trout feeds: feed consumption, growth, feed conversion, carcass composition and bio-economic analysis // *Turkish Journal of Fisheries and Aquatic Sciences*. № 2. P.101–107.
- Sargent J. R., Tocher D.R., Bell J.G. 2002. The lipids. *Fish Nutrition*, 3rd, Chap. 4. / Ed. Halver J.E., San Diego: Academic Press. P. 181–257.
- Sargent, J.R., Henderson R.J. 1995. Marine (n-3) polyunsaturated fatty acids. / Ed. Hamilton, R.J. *Developments in Oils and Fats*. London: Blackie Academic and Professional. P. 32–65.
- Tocher D.R. 2003. Metabolism and functions of lipids and fatty acids in teleost fish // *Reviews in fisheries science*. V. 11. № 2. P. 107–184.
- Tsyganov E.P. 1971. A technique for direct methylation of lipids after TLC without elution from silica gel // *Laboratornoye Delo*. No 8. P. 490–493. [in Russian]
- Zhao Z., Wu T., Tang H., Zhang J. 2008. Influence of dietary conjugated linoleic acid on growth, fatty acid composition and hepatic lipogenesis in large yellow croaker (*Pseudosciaena crocea* R.) // *J Zhejiang Univ Sci B*. V. 9. P. 691–700.

PROSPECTS FOR CREATING POLYCOMPONENTAL PRODUCTS OF THE GERODIETARY PURPOSES ON FISH AND VEGETABLE RAW MATERIAL BASIS

E.I. Ostrikova, L.F. Bedina, E.N. Kharenko

Russian Federal Research Institute of Fisheries and Oceanography (VNIRO), Russia, Moscow
e-mail: norma@vniro.ru

One of the most important and actual problems today is a health preservation, increasing a person life and the country population as a whole.

Many scientists believe the main factor that has a direct impact on health and, consequently, on life expectancy is food (Sukhanov B.P., Korolev A.A., 1991; Kasianov G.I., Zaporozhsky A.A., 1999; Tutelian V.A., Spirichev V.B., Shatnyuk L.N., 1999; Tutelian V.A., Knyazhev V.A., 2000; Monastyrsky K., 2002). The nutritional status of most elderly people under the prevailing socio-economic conditions in Russia cannot be considered rational and balanced.

It is necessary to observe a number of special requirements concerning food and energy value as well as amino acid, fatty acid, carbohydrate composition, a mass weight of food fibres, minerals, vitamins and other biologically active compounds When developing recipes and diets for the elderly. There is a number of functional and metabolic changes in all systems of body functioning coming with ageing: slow metabolism, decreased adaptability of the organism to changing environmental conditions, its resistance to infection and the ability to cell regenerate (Samsonov M.A., 1997; Yudina S.B., 1997).

Modern ideas about different ways of creation new generations of gerodietary profile products taking into account medical and dietary requirements are directed at the following:

- creation of completely balanced polycomponental products, most fully and adequately meeting requirements of elderly and old people's organisms;
- developing technology of the products designed for the improvement of food, i. e. enriched with one or more nutrients;
- creation of food modules (premixes) allowing purposefully to control synergetic properties of separate components of the product and to correct both a disposable meal and a daily meal as a whole;
- obtaining products enriched with biologically active components able to strengthen or to give the product certain properties;
- development of products that contribute to the prevention or treatment of geriatric diseases i. e. focused on specialised nutrition in elderly and old age.

Creating polycomponental products for older people is a rather complicated task due to the need to provide a full balance of a wide range of components. The important role in solving this problem is played by a rational choice of a raw material base. As a rule, gerodietary purpose products include a combination of animal and vegetable raw materials. It improves the biological properties of the product and reduces its cost. It is known that fish raw materials are a source of compounds needed for a human body. Furthermore fish proteins are digested and assimilated better than meat proteins. When using fish raw materials, wastes from their cutting as well as vegetable components computer design to create functional products that meet the medical and dietary requirements seems appropriate (Studentsova N.A., 2003).

Development of technologies for polycomponental products of gerodietary food on fish and vegetable raw materials basis will allow to reach their nutritional and biological balance and to expand a range of affordable and available products to disadvantaged groups of people. The problem of designing of delicious food analogues which look no different from our traditional products based on the use of available natural resources can be simultaneously solved. Such approach will allow to regulate the composition, properties and the degree of digestibility of received analogues. Using special technology makes it possible to recreate the structure, appearance, taste, smell, colour and all the other properties simulating the usual product.

References

- Kasianov G.I., Zaporozhsky A.A., 1999. Products for gerodietary food : problems and their solutions // Storage and processing of agricultural raw materials. P.55–56.
- Samsonov M.A., 1997. Dietary habits of the elderly. – In the proceedings I at International Conference "Scientific and practical aspects of improving the quality of products for children and gerodietary nutrition".- M., Pishchepromizdat. P.138–140.
- Studentsova N.A., 2003. Functional food products from hydrobionts / N.A. Studentsova // Foodindustry. P.80–81.
- Sukhanov B.P., Korolev A.A., 1991. Problem of nutritional adaptation to deteriorating environmental situation // Materials of joint conference "Actual issues of preventive medicine". Riga. P.116–117.
- Tutelian V.A., Knyazhev V.A., 2000. Implementation of concept of state policy in the field of healthy nutrition of Russian population : the scientific support // Nutrition.-3(69). P.4–7.
- Tutelian V.A., Spirichev V.B., Shatnyuk L.N., 1999. Correction of micronutrient deficiency – the most important aspect of the concept of healthy nutrition of Russian population // Nutrition. P.3–11.
- Yudina S.B., 1997. Medico-biological aspects of the creation of gerodietary products.- In the proceedings I at International conference "Scientific and practical aspects of improving the quality of products for children and gerodietary nutrition".-M.: Pishchepromizdat. P.136–138.
- Monastyrsky K., 2002. Functional Nutrition: the foundation of absolute health and longevity.- Lyndhurst, USA: Ageless Press. 340p.