Section 1. NEW TECHNOLOGIES OF FOOD PRODUCTS

THE PROBLEMS OF CREATING HTERAPEUTIC NUTRITION SYSTEMS OF SECOND GENERATION

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The whole complex of the problems connected with the creation and research of therapeutic nutrition systems of second generation is formulated. The following groups of problems belong to them:

1) the problems of the creation and research of flour products enriched in the deficient nutrients;
2) the problems of the creation and research of various expendable diets enriched in the deficient nutrients;
3) the problems concerning the optimization of daily diets of second generation;
4) the problems of quantitative evaluation of nutrients balance during the creation of nutrition systems;
5) the problems of the generalized biological value of protein in various stages of nutrition systems projecting, etc.

The approaches to the specified problems’ solution are defined.

Keywords: nutritional systems, mathematical modeling, rations of one-time consumption, nutrients balance.

STUDYING THE PROCESSES OF CRYOGENIC MECHANICAL CHEMISTRY OF HIGH- AND LOW-MOLECULAR NANOCOMPLEXES IN CHAMPIGNONS DURING THEIR CRYO PROCESSING WITH THE USE OF LIQUID NITROGEN

R. Pavlyuk, V. Pogarskaya, T. Matsipura, V. Kys

Nanotechnology of fine-dispersed additives based on champignons with unique characteristics with the use of mechanical destruction and mechanical activation processes is scientifically substantiated and elaborated. Comprehensive researches show that the received frozen fine-dispersed puree possesses substantially new properties. It is found that destruction of protein-chitin-mineral complexes and mechanical destruction (mechanolysis) of proteins take place during the fine-dispersed low-temperature grinding of champignons. It is revealed that the use of
mechanical activation during cryogenic mechanical grinding of mushrooms into a fine-dispersed puree leads to cryogenic destruction and mechnolysis of champignon’s proteins to its monomers – free amino acids on 70...75%. It means that protein is transformed (modified) into nanostructured form, 2/3 of which are free amino acids and much more soluble and absorbed by the human body.

**Keywords:** champignons, cryodestruction, nanostructured puree, free amino acids, easily digestible form, mechanical activation.

**STUDYING CONTENT OF BIOLOGICALLY ACTIVE SUPPLEMENTS IN NATURAL HERBAL SPICES – ADDITIVES FOR HEALTHFUL PRODUCTS**

R. Pavlyuk, V. Pogarskaya, L. Radchenko, L. Sokolova, O. Yurieva, A. Berestovaya

The content of biologically active supplements in natural spices used as raw materials for obtaining the additives in the form of powders and extracts on their bases was studied. During the research it was ascertained that natural spices can be the sources of biologically active supplements such as flavorings, essential oils, low-molecular phenolic compounds (catechins, flavonols, cinnamic acids etc.), tannins and other healing biologically active supplements, which can also be natural immune-modeling agents, antioxidants with detoxic preservative effect. The variability of the use of additives in developing a wide assortment of healthful products is demonstrated (melted cheese products, cheese stuffing, sauce-dressing). Innovative technology, process flow sheet, formulation of melted cheese products (cheese and vegetables stuffing for confectionary products “Pancake”, cheese sauces-dressings, paste-like melted cheeses) without salts – remelters as well as technology and process flow sheet for the manufacture of finely divided aromatic additives from garlic with the use of cryoblending are developed. Rational parameters of technologies are experimentally determined and substantiated. The quality of melted cheese products and finely divided aromatic additives in the process of manufacture and storage are studied. Normative documentation for finely divided aromatic additives from garlic, cheese and vegetable stuffing for confectionary products “Pancake”, cheese sauces-dressings are worked up. New technologies are officially approved in manufacturing conditions. Cheese and vegetable stuffing for confectionary products “Pancake” is introduced into manufacture.

**Keywords:** natural spices, biologically active supplements, additives, powders, extracts, healthful products.
TECHNOLOGY TONIC NANODRINKS BASED OF MILK WHEY ENRICHED BY VEGETABLE CRYOGENIC PASTE AND PHYTOEXTRACTS

R. Pavlyuk, V. Pogarskaya, T. Abramova, A. Berestovaya, N. Toporkova

The technology of new functional healthful combined milk-herbal nanodrinks for healthy food based on natural raw materials – whey and vitamin fine-dispersed frozen additives in a nanostructured puree form of pumpkin and topinambour and phytonutrients in the form of phytoextracts is scientifically substantiated and developed. It is found that drinks have stable homogeneous consistency which does not separate due to the fact that the introduction of additives from pumpkin, buckthorn and bananas possess the properties of structuring agents and thickeners. The results were confirmed by IR spectroscopic analysis, which demonstrated that new lactic herbal drinks could store 2 times longer and the content of BAS such as ascorbic acid, phenol compounds, tannins, pectin, essential amino acids, etc. exceed the known analogues and possess potential immuno-modeling properties. Thus, they can be referred to as health products recommended for healthy diet.

The final result is the development of the Scientific Research Project on nanostructured frozen puree. New types of drinks were degustated and approbated in an industrial environment of Kharkiv: Ltd «Bogodukhov milk factory» Ltd SUI «Polyus Ltd».

Keywords: nanodrinks, milk whey, fine-dispersed additives, nanostructured puree, pumpkin, topinambour, phytoextract.

ANALYSIS APPROACH TO MODELING STABLE FOOD SYSTEMS WITH LACTOBACILLUS ACIDOPHILUS

N. Kondratjuk, V. Bolshakova, Y. Pyvovarov, P. Pyvovarov

The article is devoted to topical issues of application of simulation in the conditions of formation of process steps of manufacturing-based foods containing Lactobacillus acidophilus with subsequent encapsulation process. The authors performed an assessment of the current state of the market of food products containing Lactobacillus acidophilus, identified existing problems of implementation and prospects of development of innovative activity in developing technologies encapsulated acidophilus products and products based on them. Advantages of such proposals in existence for expansion of product groups culinary products that contain
Lactobacillus acidophilus. The article describes the methodological approaches to the study of the components of culture medium on the viability and activity of Lactobacillus acidophilus. Determined the effectiveness of strategy implementation in the conditions of Ukrainian enterprises.

*Keywords*: modeling, encapsulant, probiotics, natural immunomodulators, Lactobacillus acidophilus, functional products.

**INNOVATIONS IN THE TECHNOLOGIES OF MEAT FROZEN SEMI-PRODUCTS**

M. Yancheva

The results of analytical researches concerning the study of contemporary state and perspectives of the development of refrigerated meat products technologies are presented. The consequences of negative processes occurring in meat products due to the implementation of the chain “freezing – refrigeration – defrosting” are characterized. The tasks important for technological process flow of meat refrigerated semi-products are defined. Scientific concept which can work as an operative instrument for purposeful regulation of raw meat properties by using nutritive ingredients and their mixtures with cryo-protecting properties is formulated. It is predicted that they most fully correspond to technological and economic requirements due to hydrophilic properties, influence on structural state of water and ice formation. Main criteria for the choice of nutritive cryo-protecting ingredients and the mixtures on their basis for the manufacture of meat refrigerated semi-products are given. The ways for the maintenance of meat refrigerated semi-products are specified. This will allow to obtain meat products with new consumer properties.

*Keywords*: innovations, meat semi-products, freezing, cryo-protecting effect.

**IMPROVEMENT OF THE TECHNOLOGY OF MIXED SPIRIT-CONTAINING BEVERAGES WITH THE USE OF STRUCTURING AGENT**

B. Botshtein, N. Chernaya

New structured alcoholic cocktails created by the molecular experiment, and which present a unique science, the main task of which is the elaboration of fusion version of mixing usual cocktails, are developed with the purpose of widening the assortment of mixed spirit-containing
beverages with new organoleptic indexes and with the account of the analysis of modern market of alcoholic beverages in bar industry of Ukraine. The cocktails created by means of molecular experiment are living objects, the structure of which is far from classic liquid or pureed condition, are served jellied or foamed, crystal or icy. The effect of the cocktail influences the organism concerns taste and esthetic perception. Molecular cocktail is able to cause new feelings due to its unusual structure and the form.

**Keywords:** structured spirit-containing cocktail, mixology, mixed beverages, foaming capacity, foam stability.

**TECHNOLOGICAL PARAMETERS OF THE DEVELOPED PASTILLE PRODUCTS**

G. Dukareva, O. Sokolovska

The results concerning the development of the recipes and principal technological schemes of pastille products with the use of stevia and elamine are presented in the article. Enrichment of the products with iodine with simultaneous extraction of white sugar and its change to the natural sweetener – stevia - lies in the base of the research. The work resulted in the determination and specification of technological parameters of the development of pastille products in the conditions of productive capacity. The developed recipes were tested in a confectionery enterprise and a pilot lot was manufactured.

In the result of a taste panel positive data regarding organoleptic quality parameters, which do not contradict the requirements of the corresponding normative documentation, were obtained. The received products differ in a highly dispersed structure and have a bigger mass part of air vesicles similar by the diameter. The products’ consistence is soft and slightly lingering for pastille. The developed products are enriched in vitamins, iodine; contain a large number of nutritive fibers that increases their biological value. However, tool-making determination of iodine content in ready products, the results of which will permit to specify the way they may be used.

**Keywords:** marshmallows, pastille, water extract of stevia, stevioside, elamin.
TECHNOLOGIES OF WHEAT BREAD WITH THE USE OF OAT AND MAIZE GERM PRODUCTS

G. Stepankova

The manufacture of wheat bread with the use of oat germ extraction cake and maize germ is improved. It is cleared up that the additives under research are to be added into the dough in quantity 10...20% from the total mass of flour for the provision of high level of organoleptic, physical and chemical quality parameters. The peculiarity of using additives in the technology of wheat bread is their introduction at the stage of doughing. High water-absorbing ability of oilcake predetermines the growth of the calculated humidity of wheat dough. Introduction of oat germ extraction cake and oilcake of maize germ results in the intensification of biochemical and microbiological processes in the dough that allows reducing the duration of its ripening 10...30 minutes. The assortment of bread with the investigated additives is elaborated. The quantities of nutritive and biologically active substances are calculated for the elaborated bakery products. It is found that introduction of oat germ extraction cake and maize germ oilcake facilitates the increase of dietary fibers, protein, B vitamins, vitamin E, minerals, and reduces energy value. The developed products were approbated in industrial production; the recipes.

Keywords: wheat bread, oat germs extraction cakes, maize germs oilcake, leaven dough.