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### **FEATURES OF THE USE OF ACID-FORMING MICROORGANISMS FOR THE PREPARATION OF LIQUID RYE SEMI-FINISHED PRODUCTS UNDER VARIOUS MODES OF BREAD PRODUCTION**

*T.D. Samuylenko, T.A. Gurinova, A.V. Akulich*

The analysis of lactic acid bacteria and their consortia, including those with yeast cells, used in the preparation of liquid rye semi-finished products at domestic baking enterprises has been carried out. It was revealed that the application of the used lactic acid bacteria and their consortia requires a multi-stage process, continuity of the technological cycle of preparation of liquid rye semi-finished products, round-the-clock operation of bakeries, fixed efficiency in the range of bread. The full use of these microorganisms under the discrete mode of bread production is not made. The necessity of using domestic microorganisms and their consortia previously not used in the bakery production for the preparation of liquid rye semi-finished products under the present-day discrete mode of bread production is shown.

### **STUDIES ON FOOD AND BIOLOGICAL VALUE OF THE FERMENTED MILK PRODUCT WITH RICE FUNGUS STARTER**

*T.I. Shingareva, A.A. Kupryets, E.S. Gurskaya*

Studies were made into nutritional and biological value of a new type of fermented milk product with rice fungus starter. The chemical composition of the fermented milk product with rice fungus starter was determined as well as the energy value of the product with different fat content was calculated. The amino acid composition of the product was studied, its biological value and mineral composition were determined.

### **DEVELOPMENT OF FERMENTED MILK PRODUCTS WITH SYRUPS FROM MEDICINAL PLANTS**

*T.L. Shulyak, N.F. Gushcha, T.I. Shingareva*

The composition and optimal concentrations of medicinal plant syrups in combination with fermented milk products such as kefir, ryazhenka and bioyogurt have been studied and substantiated. It was revealed that kefir with “Cranberry with fructose” syrup, ryazhenka with “Rosehip with fructose” syrup and bioyogurt with “Blueberry with fructose” syrup have the best organoleptic indicators. Physical and chemical indicators and those characterizing nutritional value of the developed dairy products with medicinal plant syrups such as mass fraction of dry substances, protein, fat, sugars, ash as well as content of vitamins, mineral substances, etc. were

examined. It is shown that fermented milk products with syrups from medicinal plants exceed the check samples without syrups in a number of indicators, in vitamin and mineral composition in particular, which confirms their high nutritional value.

## **STUDY OF MILK PRE-TREATMENT METHODS AND MODES OF RIPENING ON ITS PROPERTIES IN CHEESE MAKING**

*T.I. Shingareva*

Studies were made into the methods of preparatory preparation of milk in cheese making. The effect of heat and thermo-mechanical treatment of milk, temperature conditions of ripening on the chemical composition, viscosity, physico-chemical and organoleptic characteristics of milk and their changes during ripening was studied. The factors having a significant impact on the change in milk indices during ripening are established. The methods of preparatory heat treatment that have a positive effect on milk applicability for cheese making are determined.

## **SUBSTANTIATION OF RATIONAL PARAMETERS FOR APPLICATION OF TRANSGLUTAMINASE IN THE MANUFACTURE OF SOUR CREAM**

*O.I. Skokova, Yu.Yu. Chekanova*

Changes in organoleptic characteristics of sour cream as well as the dynamics of changes in the titratable and true acidity, water-holding capacity and rheological parameters of the product manufactured with transglutaminase enzyme preparation and stored at a temperature  $(4\pm 2)$  °C were studied. Rational parameters of the application of transglutaminase enzyme in the manufacture of sour cream with fat mass fraction of 25% were developed.

## **INTENSIFICATION OF THE PROCESS OF OBTAINING JUICE FROM BLACK CURRANT BERRIES**

*N.V. Samankova, Yu.S. Nazarova, A.A. Serkov*

Chemical composition of Belorusochka variety black currant berries grown in the Republic of Belarus was examined. The effect of enzyme treatment of black currant pulp by various enzyme preparations of pectolytic action on the yield and quality of juice was studied. An effective enzyme preparation was selected and optimal treatment parameters for black currant pulp were determined. Chemical composition of juice and pomace after pulp treatment with the enzyme preparation was studied.

## **USE OF ENZYME PREPARATIONS AS COMPONENTS OF BIOLOGICALLY ACTIVE BAKING MIXTURE**

*E.V. Nelyubina, E.N. Urbanchik, E.S. Ksenchuk, E.V. Zakharova, O.S. Kaminskaya*

The effect of the enzyme preparations of the company of biotechnology concern DSM on the quality of bread and its ability to preserve freshness has been studied. It is shown that the use of the studied enzyme preparations in the production of rye-

wheat bread increases score, specific volume, porosity and dimensional stability of the finished product. Enzyme preparation TBC “EnzoWay 7.07” (MAM 10000) has a positive effect on the ability of bread to retain its freshness during storage. The choice of enzyme preparation TBC “EnzoWay 7.07” (MAM 10000) as an active component in the formation of the composition of a biologically active baking mixture based on rye malt is substantiated.

## **TECHNOLOGY FOR THE PRODUCTION OF MACARONI PRODUCTS FROM POTATO STARCH**

*M.N. Vasilevskaya, E.F. Tikhonovich*

Studies have been conducted to examine the possibility of using native potato starch as a gluten-free starch-containing raw material for the production of macaroni products. The possibility of using modified starches as texturizing ingredients in the production of macaroni products from potato starch is shown. There were determined technological parameters at the main stages of the production of macaroni products from potato starch. The possibility of improving consumer-oriented characteristics of macaroni products from potato starch is shown. The processes of storage of the developed macaroni products were studied, on the basis of which the conditions and shelf life of the products were established.

## **THE EFFECT OF THE STORAGE PERIOD OF EXPANSION EXTRUDED COMBINED FEED FOR STURGEONS ON ITS QUALITY**

*J.V. Koshak, L.V. Rukshan, N.N. Gadlevskaya, N.V. Zenovich, A.N. Rusina*

A qualitative analysis of expansion extruded combined feed for sturgeons during storage for 1.5; 3 and 5.5 months was made. Changes in the content of dry matter, crude protein, fat, amino acid composition and amino acid score in the studied combined feed during storage were determined. Fatty acid composition of the combined feed and its change during storage was studied. It was revealed that acid and peroxide values during storage of the combined feed for 1.5; 3 and 5.5 months were below the rated values. Changes in temperature, relative humidity and outside air pressure during spring, summer and autumn storage months of the combined feed were investigated at the feed mill in Zhabinka and their influence on the combined feed quality indicators was examined. Fish feeding was realized with combined feed after 5 and 6 months of storage and its safety was revealed. It was established that shelf life and storage of expansion extruded combined feed for sturgeons are 4 and 6 months, respectively.

## **STUDIES ON GRANULOMETRIC COMPOSITION AND QUALITY OF FLOUR FROM TRITICOLE OF KAZAKHSTAN SELECTION**

*K.K. Zhanabaeva, O.N. Ongarbaeva, L.V. Rukshan*

Flour was obtained from three varieties of triticale grain of Kazakhstan selection that was grown in different areas and had different vitreousness and hardness values.

Granulometric composition of triticale flour and nature of its change depending on the variety and growing area were determined. Triticale flour was sorted into nine fractions according to its size. The quality of each flour fraction was estimated by the following indicators: moisture, quantity and quality of raw gluten, falling number values and autolytic activity, whiteness and ash content. Chemical composition was determined for each fraction of flour. The influence of the size of each flour fraction on all quality indicators under examination was revealed. The analysis of the chemical composition of triticale flour fractions made it possible to choose fractions that are the highest in starch and protein and thus to make flour for various purposes.

### **OPTIMIZATION OF THE PROCESS FOR MATURATION OF GRAIN DISTILLATES IN CONTACT WITH PREPARED OAK WOOD OF BELARUSIAN ORIGIN**

*V.I. Solovey, T.M. Tananayko, A.A. Pushkar, D.V. Khlimankov*

The work was carried out to optimize maturation process in order to achieve maximum level of accumulation of aromatic substances (phenolic and furan components) and total extract in grain distillates aged in contact with oak wood of Belarusian origin at the initial stage of aging. The possibility of varying the factors under study in the investigated grain distillates aged in contact with oak wood of Belarusian origin was shown, their qualitative and quantitative composition was determined in terms of temperature conditions of maturation, dosing of oak wood chips and aging time. The maturation process of grain distillates that are in contact with oak wood of domestic origin was optimized at the initial stage of ageing, which made it possible to establish technological parameters that ensure the production of aged grain distillates with maximum content of phenolic and furan compounds and extractive substances.

### **STUDIES ON THE PROCESS OF FERMENTATION OF WORT FROM INULIN AND STARCH-CONTAINING RAW MATERIALS WITH THE USE OF VARIOUS YEAST RACES**

*E.M. Morgunova, Yu.S. Pusovskaya, A.A. Pushkar, D.V. Khlimankov*

The process of fermentation of wort from various species composition of topinambour tubers mixed with grain raw materials using different yeast races was carried out. Data on biomass accumulation during fermentation, dynamics of carbon dioxide emission as well as the results of the studied data on the technological parameters of the fermented wort during processing of the mixed inulin and starch-containing raw materials were summarized. Promising varieties of topinambour tubers and yeast races that provide the highest alcohol yield were established.

## **DESTRUCTION AND DISPOSAL OF POLYMER-BASED PACKAGING MATERIALS**

*L.M. Tkachenko, A.A. Rybakov, L.A. Scherbina, A.Yu. Bolotko, A.L. Shcherbina, I.A. Budkute*

The issues of application, destruction and disposal of polymeric materials used for the production of packaging are examined. Destruction of biodegradable polymeric materials in aqueous media is considered in terms of polylactide. The possibility of obtaining an economic, environmental and social effect from the disposal of biodegradable polymeric materials (case study: polylactide) by composting is shown.

## **METHODS OF IDENTIFICATION OF WINE PRODUCTS FALSIFICATION**

*N.A. Shelegova, A.Yu. Bolotko, T.V. Urbanovich, M.D. Sorokin*

The content of secondary fermentation products in wines was studied, which may indicate the facts of falsification of wines. The content of higher alcohols, volatile lower acids and acetaldehyde in the samples of red and white grape wines presented on Mogilev commodity market was determined by the method of high-performance gas chromatography.

## **STUDIES ON ORGANOLEPTIC AND MICROSTRUCTURAL INDICATORS OF PORK WITH TECHNOLOGICAL DEFECTS DURING AUTOLYSIS PROCESS**

*O.V. Shkabrov, I.M. Chernukha, I.I. Andreeva, E.D. Borisova, V.D. Reznichenko*

Organoleptic quality indicators (appearance and color of the surface, type of muscles in the cut, consistency of muscle tissue, odor, fat and broth state) and microstructural indicators of PSE-, DFD- and NOR-pork meat samples were studied during eight days of autolysis. A decrease in the technological characteristics of meat samples, rate of change of which is different for PSE-, DFD- and NOR-meat was revealed. It was established that on the seventh day of autolysis PSE-meat becomes unsuitable for the use in the production of meat products, and DFD-meat - on the eighth day.

## **THERMOMECHANICAL TREATMENT OF GERMINATED RYE GRAINS IN THE APPARATUS WITH SWIRLING FLOWS**

*V.A. Sharshunov, M.A. Kirkor, E.N. Urbanchik, R.A. Bondarev, A.V. Evdokimov, I.O. Alekseenko*

The results are presented on the experimental studies of the combined process of drying and grinding of germinated rye grains in the apparatus with swirling flows. Criterion equations allowing to calculate structural dimensions of the apparatus as well as to determine main technological parameters of the combined process of drying and grinding of germinated grain were developed. Complex nature of the combined process, which is expressed in the mutual significance of the parameters depending on the initial moisture content of the material, plant performance, drying agent temperature and frequency of grinder rotor rotation was determined.

## **INFLUENCE OF GEOMETRIC PARAMETERS OF THE KNIVES ON THE PROCESS OF CUTTING MEAT RAW MATERIALS IN CUTTERS**

*A. L. Zheludkov, S. V. Akulenko, K. K. Gulyaev*

The influence of the geometrical parameters of the cutter knife on the cutting process is analyzed. The main ways of improving the design of the working bodies of machines for fine grinding of meat raw materials have been determined, which will improve the quality of the ground product and reduce energy costs for the cutting process. The results of theoretical and experimental studies of the deflected mode of cutter knives with fine grinding of meat raw materials in cutters are presented.

## **UNDISTRIBUTED PROFIT AS A SOURCE OF FINANCIAL RESOURCES: ACCOUNTING AND FINANCIAL ASPECTS**

*E.E. Bantsevich, E.A. Kozlova, D.A. Proleychik*

Approaches to the definition of the concepts “financial resources” and “undistributed profit” are studied. The essence of undistributed profit is determined on the basis of accounting and financial approaches. The features of profit distribution in economic and legal aspects are considered.

## **ENVIRONMENTAL APPROACH IN PEDAGOGY - A HISTORIOGRAPHIC REVIEW**

*N.I. Demidova*

The results of the analysis of approaches to understanding the essence of the educational environment at different stages of social development as well as the modern methodology of the environmental approach are presented, which made it possible to make actual the problem of the educational environment of a higher education institution as a factor of the personal and professional development and self-development of the future specialist. On the basis of the conducted historiographic analysis definition of the notion “environment of professional education” is specified.