Висновки

В результаті аналізу технологічний комплекс пивоварного виробництва визначено як складну технологічну та організаційну систему, що складається з великої кількості взаємозв'язаних підсистем. Має високий ступінь невизначеності та ознаки хаотичної поведінки. Аналіз сучасного стану автоматизації технологічних процесів виробництва пива дав можливість оцінити недоліки існуючих виробничих систем та зробити з цього висновки щодо необхідності розробки системи управління, яка в максимально необхідній мірі буде їх усувати. Визначено основні напрямки удосконалення технологічних процесів виробництва пива.

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ABSTRACT AND REFERENCES

Nutriciology, dietetics, problems of nutrition

PRESENT STATE AND PROSPECTIVE LINES OF DEVELOPMENT FOR MANUFACTURING OF GERODIET NUTRITION FOOD PRODUCTS *(P. 3-8)*

Angela Dyakonova, Vladimira. Nesterenko

The analysis of the present state of the manufacturing of gerodiet nutrition food products was performed, the problems connected with the development of the manufacturing of products for the elderly people were researched and prospective lines of their development were determined. It was established that the most important problem for the elderly is providing the organism with biologically and physiologically valuable substances, including macro- and microelements, vitamins, essential amino acids, the presence and ratio of which have significant influence on metabolic and uptake processes. The topical problem of the present days is the development of scientific approaches to creation of functional food products which due to their composition and producible effect for the organism of the elderly people must have considerable biological effect, meaning provision with nutrient materials and performing of medical and preventive function.

Key words: gerodiet nutrition food products, mineral substances, vitamins, amino acids

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DEVELOPMENT OF FUNCTIONAL DIETS FOR STUDENTS *(P. 9-14)*

Mykhailo Peresichny, Svetlana Peresichna

The actual supply of students' diet in basic nutrients at higher educational establishments of Ukraine was studied proving significant deviations from a balanced diet formula, mainly in terms of bioactive agents, vitamins, macro- and microelements. In fact, the actual food value of students' diet in the overwhelming majority of higher educational establishments is 18 – 20 % less than a daily physical need. The deficiency in dietary fat and carbohydrate is in average 16.2% and 15.6% respectively, whereas that of animal protein is 15 – 20 %. The level of satisfaction og the daily need in ascorbic acid is 40 – 60%, vitamins of B group – 36 –70 %, calcium – 47 %, phosphorus – 69 %, magnesium – 59%, iron – 52%, while the consumption of iodine and selenium are also insufficient.

The irrationally selected diet with imbalanced nutrient contents can result in increased fatigability, depression, nervous breakdowns, performance impairment, and manifestations of alimentary diseases (hypovitaminosis, avitaminosis, obesity etc.).

The daily composition of dishes and beverages imply the application of main nutritional laws and satisfaction of a daily physiological need in nutrients. We recommended introducing comprehensive diets balanced in terms of main nutrients and calories in canteens of higher educational establishments. For this purpose, we have scientifically substantiated weekly diets for lunches in two variations, which are balanced in terms of main nutrients and calories.

The developed diets contain functional dishes which contain stone-ground wholegrain wheat flour, rye flour, soya flour, red lentils, sea cabbage, spirulina, and dietary supplements: apple powder, wheat bran, wheat germ, "ECO" barley, cake of silybum marianum, natural powder of shrimps RieberFoodIngredients;

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CONSUMER BENEFITS OF NUTRITIONAL SUPPORT PRODUCTS FOR PEOPLE WITH BURN INJURIES *(P. 14-19)*

Natalia Prytulska , Anna Kuchinska

This research deals with the researches of the results of consumer expectations regarding the properties of products for nutritional support for people with burns.

One of the problems in the food industry in Ukraine is the lack of food nutritional support for people with burn injuries domestic production and the high cost of foreign products. In order to develop optimal nutritional support assortment of food was conducted market research to determine the consumer preferences.

The survey found that 45% of people with burn injuries basic criterion buying products nutritional support consider improving the healing of superficial burns, 40% - correction of disorders of energy metabolism, 10% - increase immunity and 5 % – a positive trend neurological status. The survey found that 66.7 % of respondents prefer dry mixtures

Importance taste of the product marked 95.3% of respondents. The biggest advantage of consumers prefer sweet-sour taste – 54.7%. Is established that consumers are for single servings of nutritional support products preferred volume of 0.25 L – 56.7%, According to the data obtained were identified key flavor characteristics of the product, packaging preferences, consistency and a single serving. The results of studies of consumer preferences will predict demand for products and promote the development of optimal mix of recipes for nutritional support for people with burn injuries.

Keywords: products of nutritional support, enteral nutrition,marketing research

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Biological processes, biotechnology of food products, BAA

OPTIMIZATION OF PARAMETERS OF PROCESS OF ENCAPSULATION OF THE PROBIOTIC CULTURES*(P. 19-22)*

Tatiana Volovik, Leonid Kaprelyans

The article presents the results of optimization of main parameters providing process of formation of a matrix in the form of gel granules of a given size and strictly spherical form. The low methoxyl pectin was used as a protective cover for probiotics. Previously was established optimum concentration of pectin solution which provides the maximum strength of the received granules. It is experimentally established that diameter of forming gel granules, depends on two major factors — diameter of an opening of a nozzle of the portioning device and distance (height) from it to a

surface of forming solution ($CaCl_2$). It is established that granules with a diameter of 3 mm are most convenient to swallow. Results of optimization defined that formation of granules by the set size can be provided in the range of change of diameter of an opening of a nozzle from 0,5 to 0,88 mm and nozzle distance to a solution surface from 5 to 10 mm. Therefore, the increase in diameter of a nozzle and distance promotes change of size of the granules and formation of an asheric form that doesn't meet the requirements to this production.

Keywords: encapsulation, probiotic cultures, biopolymer, low methoxyl pectin, calcium chloride.

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CULTURES FOR FERMENTATION IN RAW SMOKED SAUSAGES *(P. 23-26)*

Irina Kichenko, Oksana Topchiy, Yuliya Kruzhova, Oleg Rybachuk

Based on research the influence of bacterial preparations Bactoferm F-SC-111 and Bactoferm F-1 during technological process for spontaneous microflora were studied.

Functioning of bacterial preparation Bactoferm F-SC-111 and Bactoferm F-1 compared with existing bacterial preparation ПБ-МП of Russian origin. Raw smoked sausage was produced by traditional technology without starter cultures have been choose as control. Prepared preparation applied in bowl chopper with lean meat and mixed 3-5 minutes. Fermentation process carried in climate chamber.

Based on research results the influence of starter cultures on spontaneous microflora at different stage of technological process was analyzed, after cutting process and on first and second day of fermentation and on 3, 5, 8, 10 days of drying.

These results show that application of bacterial preparation Bactoferm F-SC-111 and Bactoferm F-1 provides accelerated development and dominance beneficial microflora at the production of raw smoked sausages comparing with bacterial preparation which needed to be activated in advance.

Keywords: raw smoked sausage, starter cultures, bacterial products, microflora, lactic acid bacteria.

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Chemistry of food products and materials. New raw materials

RESEARCH OF THE INFLUENCE OF IRON IONS ON QUALITY ROSE TABLE WINE MATERIALS *(P. 26-29)*

Marina Bilko, Nina Grechko

The effect of iron ions and their forms on the oxidation-reduction condition and the colour characteristics of rose dry wine, phenolic and anthocyanins content were researched. The redistribution of iron form in the wine in the oxidation process was established. The ions Fe (II) pass into Fe (III). Upon that phenolic and anthocyanins content reduce in rose dry wine. Activating effect of oxidation of the iron content up to 15 mg/dm^3 was established. It was exposed that increasing concentration of iron increases the degree of oxidation This fact is indicated by the change of redox characteristics of dry rose wine. The ways to improve the quality of dry rose wine are: to protect it from oxidation, to watch over the level of iron and in the case of its limit-exceeding – to conduct the demetallizatoin.

Key words: dry rose wine, phenolic substances, anthocyanins, forms of iron, oxidation

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DESALINATION OF NATURAL MINERAL WATER IN THE PRODUCTION TECHNOLOGY OF SPORTS DRINKS *(P. 29-36)*

Ye.A. Kovalenko, I.V. Kovalenko, O.B. Vasyliv

Purpose of scientific research, the results of which are presented in the paper is to provide a method and technological regimes desalination natural mineral medical-table water to sodium chloride water treatment technologies in the production of beverages for athletes. Object of study in the technological parameters of the process are the low-temperature desalination of natural mineral water.

When performing scientific work the standard physical and chemical methods of research of quality of water are used. Mathematical treatment of experi-

mental data and their synthesis is performed using functions in a package Excel.

As a result of scientific research suggested an improved method for organizing the process of desalination freeze. Also investigated the influence of different factors on the quality of the process of freezing desalinated natural mineral medical-table sodium chloride water "Kuyalnik" and identified patterns of distribution of components between the source water, frozen solid phase and a concentrated solution during freezing. The main result is rational technological regimes of the desalination process.

Keywords: sports drinks, natural mineral water, desalinated water freeze, technological parameters of the process, the quality of treated water.

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ACTIVATED CARBON IN WATER TREATMENT FOR DRINKS *(P. 36-42)*

Svitlana Oliynyk, Vitaliy Prybylsky, Anatoliy Kuts, Volodymyr Kovalchuk, Olena Kovalenko

The purpose of scientific research, the results of which are given in the article, is the improvement of the technology of water conditioning by sorption purification of water for the production of beverages, including alcoholic beverages. The subject of research was drinking water, prepared water, activated carbon such grades Silcarbon K1810, Silcarbon K835, Silcarbon K814 compared to Silcarbon K3060. During the research we are used the conventional methods of analysis in liqueur and vodka production, the theoretical synthesis and comparison, the system approach.

During the research carried out comparative assessment of physic-chemical and sorption characteristics of activated carbon and examined the efficiency of its use for water conditioning from the manufacture of beverages, including vodka and other alcoholic beverages. Research the actuality of using activated carbon such grades Silcarbon K1810, Silcarbon K835 and Silcarbon K814 in the production of beverages and alcohol products. It is shown that the improved physic-chemical and sorption characteristics of activated carbon allow increasing the specific volume of water produced by 18...20 %.

In a result set that investigated the activated carbon is a perspective and gives an opportunity to significantly reduce the water content of organic matter, iron, nitrogen compounds, improve the organoleptic characteristics both water and alcohol products.

Keywords: water, water treatment, activated carbon, conditioning

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FORMATION OF THE BIOACTIVE COMPOUNDS IN TOMATO FRUITS UNDER THE INFLUENCE OF ABIOTIC FACTORS *(P. 43-46)*

Olesia Priss

The influence of hydrothermal conditions on formation of ascorbic acid, phenolic substances, carotenoids in fruits of tomatoes has been investigated. Relationships are set on the basis of connection between

the pair correlation analysis of abiotic factors change and concentrations of bioactive compounds. It was shown that bioactive compounds formation in tomato fruits is significantly influenced by the sum of temperatures in the period of fruits forming and ripening where the coefficient of correlation is -0,64 to 0,75 depending on the characteristic. There is a strong direct correlation (r=0,68) between the ascorbic acid pool and rainfall in the period of forming and ripening of fruits. Rainfall does not affect the formation of phenolic compounds and carotenoids. The concentrations of each bioactive constituent under consideration are in close correlation with each other that indicates the similarity of favorable conditions for the formation of a maximum fund of bioactive compounds.

Keywords: tomatoes, ascorbic acid, phenolic compounds, carotenoids, abiotic factors.

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USE OF UNCONVENTIONAL MATERIALS PLANT IN TECHNOLOGY FERMENTED BEVERAGES *(P. 47-51)*

Vitalii Prybylskyi, Irina Melnik, Stanislav Omelchuk

In recent years, increasing attention is paid to the production of beverages containing biologically active substances. Assortment of drinks is constantly expanding due to the development of new technologies. Special attention of experts to raw materials of a natural origin, that contain bioactive substances, is observed. Unique complexes of natural plant materials provide both therapeutic and preventive action, and the possibility of use as food additives, as they have different taste and aromatic, tannic, antioxidant, antimicrobial and other properties.

Along with many urgent problems one of the major problems of the food industry is the manufacture of fermented drinks with the addition of bioactive substances that are targeted for use in the production of local raw materials of vegetable origin. The article describes the existing manufacturing techniques of fermented drinks, chemical composition of plant material, namely walnut and their impact on the processes and the quality of finished fermented drinks based on malt wort.

Keywords: fermented drinks, bioactive substances, malt wort, walnut.

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EFFECT OF NITROGEN AND VITAMIN SUPPLEMENTS ON THE PROCESS OF ALCOHOLIC FERMENTATION *(P. 52-57)*

Oksana Tkachenko, Larisa Gyral, Svetlana Drevova

In winemaking and viticulture, the nitrogen content in grapes and wort is a determining factor for the metabolism of yeast during an alcoholic fermentation and plays an important role in the formation of physiochemical and foamy properties of champagne wine materials and organoleptic profile of sparkling wines. The article presents the results of a study on the effect of nitrogen and vitamin fertilizing "Aktiferm" and "Aktiferm Organic" on the dynamics of yeast biomass, the pH of the medium, the mass concentration of amino nitrogen and tartaric acid during fermentation wort produced from the classic Champagne grape varieties Chardonnay and Pinot Noir. Addition of nutrients in the clarified wort provides the growth of yeasts during the alcoholic fermentation, as well as contributes to the rapid and efficient course of this process due to complete fermentation of sugars. However, the mass concentration of amino nitrogen in the grapes, without adding fertilizing at the beginning of the alcoholic fermentation provides a stable and complete fermentation of wort without formation of foreign shades in flavor and taste. It was established that fermentation activators contribute to uniform reduction of the pH in fermenting wort and the amount of tartaric acid. Fertilizing "Aktiferm Organic" enhances aromatic profile and flavor characteristics of champagne wine materials.

Keywords: nitrogen supplementation, yeast biomass, physico – chemical properties, wine fermentation.

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Technology and safety of food products

SAFETY OF QUICK-FROZEN JUICES WITH PULP *(P. 58-61)*

Dyakov O., Belinska S.

Problem definition. Fresh fruits and vegetables are an essential and indispensable source of biologically and physiologically active substances. However, during the cultivation plant raw materials collect contaminants of chemical nature, because of more intensive farming techniques and environmental disasters. At the same time, during storage fresh fruits and vegetables can be exposed to bacteriological damage, which causes quantitative and qualitative losses and accumulation of mycotoxins. *Goal of research* is to study the safety of quick-frozen juices with pulp.

Methods and materials. Objects of research – quick-frozen juices with pulp received from variety of melon *Amal*, watermelon *Khersonskyi*, apples *Golden Delicious*, carrot *Canada*, celery *Giant*, and beetroot *Bordeaux*. To increase consumption value, improve organoleptic qualities, to stabilize color and consistency of quick-frozen juices we proposed to blend apple, carrot and celery juices and to add natural polysaccharide xanthan gum and ascorbic acid.

Results of research. Coliform bacteria and pathogenic microorganisms, including Salmonella, were not found. It was discovered that the freezing process is a determining factor for reducing the number of mold fungi and yeasts, which are non-persistent to low temperatures. Radioactive nuclides ^{137}Cs i ^{90}Sr in the juices were not detected. Toxic elements, such as cadmium, mercury and arsenic also were not found. The levels of lead, cuprum and zinc were within the limits of the permissible concentrations.

Conclusions. The results of researches confirm the safety of quick-frozen juices with pulp

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TECHNOLOGICAL ASSESSMENT OF SHKODA GRAPE AND ITS SELECTION OF USAGE DIRECTION *(P. 62-67)*

Irina Kalmykova, Irina Kovaleva, Liudmila Gerus, Marina Fedorenko

The study of Shkoda grape of the new generation of selection of the National Research Center "Institute of Winegrowing and Winemaking named after V. E. Tairov" was conducted to identify the suitability of this sort to consume it fresh and use it in the winemaking.

The characteristics of Shkoda grape was given compared with wide district Karaburnu grape for table use in Odessa Region and sorts of a new selection grape – Arkadia, Flora, Muscat Pearl, Kardishakh. The mechanical analysis of the grape showed that Shkoda grape is a universal wine and table variety.

On the basis of the organoleptic estimation it is showed that Shkoda grape must be classified as the high-quality table variety of grape. Except for common factors (saccharinity and acidity) a number of indicators of chemical composition of Shkoda grape berry was identified as the additional quality criteria of table grape. It was established that the nutrition value of Shkoda grape is high.

The chemical composition and physical and chemical characteristics of the wort from Shkoda grape, considering biochemical characteristics of raw material and enzymatic action of the wort. The data analysis shows the possibility of preparation of wine materials from Shkoda grape as table and dessert. The organoleptical testing of red table dry wine material, prepared from Shkoda grape by fermentation of septum, showed that it is notable for the high organoleptic indicators. The dessert wine material received the low assessment because of the type mismatch.

Keywords: grape, new selection generation, universal Shkoda grape, technological assessment, wine materials.

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DEMONSTRATION OF FEASIBILITY AND DEVELOPMENT OF TECHNOLOGY OF LIQUEURS FROM GRAPE POMACE *(P. 68-72)*

Larisa Osipova

The technology of liqueurs, producible on the basis of extracts from grape pomace, was developed and its feasibility was demonstrated. Parameters of extracting were investigated (temperature, duration, type of extract, degree of grinding, static and dynamic modes), which provide intensification of extraction of phenolic compounds from grape pomace. It was set that grinding up grape pomace to the degree of dispersion of 2...3 mm, results in the 1,5-multiple increase of concentration of phenolic compounds in extracts and reduction of duration of process to 30,0 min. Adding to the extractant of tartaric acid is accompanied by the apparent increase of concentration of phenolic compounds in the extracts (by 1,3…1,9 times), as well as by reduction of duration of process of extracting to 20 min. The best extractants of phenolic compounds, contained in grape pomace, are aqueous-alcoholic solutions with volume percent of ethyl alcohol of 40,0…80,0 %, acidified to 1 % by tartaric acid.

Liqueurs, made by the developed technology, are distinguished by high concentration of biologically active substances, original organoleptic characteristics, and are recommended for the production of semi-dry and semi-sweet wines.

Realization of technology does not require the presence of difficult, special equipment, and can be implemented at enterprises, processing a grape. Implementation of technology in production will allow to use resources more effectively and, thus, to provide financial cost saving.

Keywords: grape pomace, utilization, extracting, phenolic compounds, physiological action, liqueurs.

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OPTIMIZATION OF HEAT TREATMENT MODES FOR BOILED SAUSAGES *(P. 73-76)*

Anna Soletska

The improvement of heat treatment modes for sausage products is a truly topical issue, since even minor temperature fluctuations at the stage of roasting and boiling have a big affect on the weight loss, as well as on organoleptic and microbiological parameters of finished products. Now, it is possible to differentiate heat treatment modes in accordance with the sausage mince chemical composition and casing diameter because operating meat-processing factories are equipped with new generation, software-based multi-purpose heat chambers.

A number of industrial tests was carried out to study the influence of roasting of boiled sausage products at 50 to 70 ^{o}C, and boiling at 75 to 80 ^{o}C, on some technological parameters depending on the fat content in mince (22 to 45 %) and diameter of sausage links (32 to 65 mm).

The mathematical modeling for heat treatment of boiled sausage products in accordance with the fat content, sausage link diameter and modes of roasting and boiling is a way to project the minimal loss of product weight at 50 to 70 ^{o}C roasting temperature, 75 to 80 ^{o}C boiling temperature, and with the fat content of mince between 22 and 45%, and 32 to 65 mm casings diameter .

Keywords: roasting, boiling, boiled sausages, modes, optimization

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IMPROVEMENT OF TECHNOLOGY OF "BIOLACT" FERMENTED MILK DRINK FOR BABY FOODS *(P. 77-84)*

Nataliia Tkachenko, Ansatasiya Avershina

This paper presents an analysis of the market for baby food products in Ukraine; it shows the prospects of development and improvement of technologies for probiotic dairy products for baby foods, including

"Biolact" milk drinks; is analyses the process flow sheet of "Biolact" drink production, and the ways of its improvement using the direct introduction of combined cultures from bacterial concentrates, acidophilus bacteria and milk adapted mixed cultures of bifidobacteria, bifidogenic factors, prebiotics, proteolytic enzymes, polyunsaturated fatty acid complexes, vitamins and minerals; it contains the advanced process flow diagram for the production of "Biolact" fermented milk drink for baby foods, partially adapted to breast milk, with extended shelf life, enhanced probiotic and hypo-allergenic properties; this paper presents a description of the improved technology, the results of industrial testing; it describes the prospects for further research and manufacturing application of the advanced product technology.

Keywords: baby food, technology, fermented milk drink, adaptation, bifidobacterium, lactobacillus, bifidogenic factor, probiotic and hypo-allergenic properties.

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Processes, equipment, automatization, management and economy

USE OF MICROWAVE TECHNOLOGIES DURING INTEGRATED COFFEE SLUDGE UTILIZATION *(P. 85-88)*

Sergei Terziev, Nataliia Ruzhitskaia, Tatiana Makievskaia, Oleg Burdo

During production of instant coffee 1 ton of finished product accounts for 1,5…2,0 tons of coffee sludge. Up to 4 % of extractive substances, 7…12 % of coffee oil, 3…5 % of flavouring substances, 5…7 % of protein remain in sludge after extraction. It is possible to obtain additional water-soluble coffee materials and coffee oil while coffee sludge utilization. It is offered to intensify extraction of flavouring substances and oil out of coffee sludge using microwave technologies. To extract water-soluble materials out of coffee sludge the continuous counterflow microwave unit was designed. The joint impact of microwave field and extragent's counterflow against solid phase on plant raw material leads to increasing the speed of diffusion transfer several-fold.

After water extraction it is offered to dry sludge and extract oil with organic solvents (hexane, ethanol). The batch extractor with microwave intensifier alternated by extraction operations and extract distillation was designed. The extractor allows to obtain 13…20% butter-to-dry sludge ratio. Flavored coffee oil which incorporates bright flavour and coffee taste and rich deep brown colour was obtained after all tests. The designed pilot microwave extractors provide "clean" extraction technology, allow to shorten process duration, to receive coffee extracts and valuable coffee oil.

Keywords: coffee sludge, barodiffusion, extractor, microwaves.

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OPTIMIZATION OF THE BREWING PROCESS USING SCENARIO APPROACH UNDER SITUATIONAL UNCERTAINTIES *(P. 89-96)*

Mykola Romanov, Vasil Kishenko, Anatoliy Ladaniuk

Paper considers the question of optimization of basic technological processes of beer production.

The scenario approach can adequately formulate the opinions of experts and to use the results of experimental research to predict the attractive behavior of course of events in complex systems by means of multivariate analysis of situational control object. Each scenario connects the change of external conditions with parameters. Management scenarios are defined as a sequence of transitions by fuzzy logic rules between situationally-significant areas presented a set of models that assess the situation at the site. The problem of optimization of technological processes of beer production was solved in the framework of the scenario approach, subject to situational changing the priority criteria and restrictions that have linguistic assessment. According to a survey of experts and processing of experimental data identified on static models for each selected fragment control script. Using this knowledge developed intelligent control system of beer production processes based on the principles of situational analysis of the behavior of the control object. The analysis of the results makes it possible to develop such control algorithms that would give such

an opportunity to improve technical and economic indicators such as product quality, raw material costs and productivity and technological complex.

Keywords: optimization of beer production, the scenario approach, situational change, identification, intelligent system.

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