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Food Science for Well-being
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The congress addressed the following topics:

FOOD EXPERTISE, SAFETY AND TECHNOLOGIES

- **Food Expertise and Safety**
- **Food Technologies**

ENERGY SYSTEMS FOR FOOD CHAIN

- **Energy Efficiency**
- **Machine Building for Food Chain**
- **Intelligent Control Systems**

NATURAL BIOACTIVE COMPOUNDS, FUNCTIONAL AND NATURAL FOOD PRODUCTS, PACKING, STORING AND PROCESSING

- **Natural Bioactive Compounds, Functional and Local Food Products**
- **Packaging, Storing and Processing**
- **Food Processing**

MODERN CHALLENGES AND COMPETITIVENESS

YOUNG FOOD SCIENTISTS — OUR HORIZON

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<i>Katerina KONOTOP, Nastia YASINSKA, Pavlo NAZARUK, Nataliya SABADASH, Igor FESYCH, Evgen REBENOK</i>	
OBTAINING CATIONIC STARCH AND ITS USING IN SHAMPOO PRODUCTION	103
<i>Olga KOVALCHUK</i>	
OVERCOMING DIFFICULTIES IN TEACHING ENGLISH FOR FOOD TECHNOLOGY	104
<i>Galyna CHEREDNICHENKO</i>	
CHALLENGES IN TRAINING OF FUTURE ENGINEERS FOR FOOD INDUSTRY	104
<i>Volodymyr POLUPAN, Galyna CHEREDNICHENKO</i>	
GENETIC ALGORITHM FOR MULTI OBJECTIVE OPTIMIZATION	105
<i>Galyna CHEREDNICHENKO, Liudmyla SHAPRAN, Liudmyla KUNYTSIA</i>	
TRAINING OF MASTER OF SCIENCE (MSc) IN FOOD SCIENCE AND TECHNOLOGY	105
<i>Catarina FARIA, Conrado CARRASCOSA, António RAPOSO</i>	
FOOD NEOPHOBIA AND PEOPLE'S WILLINGNESS TO TRY NOVEL FOODS: BARRIERS AND CHALLENGES	106
<i>Viktor SOFILKANYCH, Volodymyr SHESTERENKO</i>	
HIGHER HARMONICS AS THE MAIN PROBLEM OF ELECTRICITY SUPPLY	106
<i>Oleg MASHCHENKO, Volodymyr SHESTERENKO</i>	
POWER FACTOR IMPROVEMENT IN POWER SUPPLY SYSTEMS OF INDUSTRIAL ENTERPRISES	107
<i>Roman GRYSHCHEK, Andriy FORSIUK, Oleksiy PYLYPENKO</i>	
DYNAMICS OF ICE FORMATION ON VERTICAL PIPES	107
<i>Andrew BOOLKA, Andrew BOBROW, Vitalii RACHOK, Yulia TELICHKUN, Vladimir TELICHKUN</i>	
INFLUENCE FREQUENCY ROTATION THE WORKING BODY ON PROCESS OF KNEADING DOUGH	108
<i>Valeriya AIRAPETOVA, Oksana BAGINSKA, Nataliya SABADASH, Igor FESYCH</i>	
RESEARCH OF THE CHARGE COMPOSITION FOR SYNTHESIS OF OXIDE-POLYMER COMPOSITE BY THERMAL GRAVIMETRIC METHOD	108
<i>Oleg KUZMIN, Tatiana SHENDRIK</i>	
PROSPECTIVE ASSESSMENT OF THE USE OF THE CARBONIZED WOOD WASTE OF FOOD INDUSTRY FOR THE PRODUCTION OF ACTIVATED CARBON	109
<i>Dmytro KRONIKOVSKIY</i>	
SIMULATION OF OPTIMAL CONTROLS FOR THERMAL MODE OF SUGAR FACTORY INCLINED DIFFUSION APPARATUS	109
<i>Oksana TKACHENKO, Olha TRYNKAL</i>	
THE RETROSPECTIVE AND PERSPECTIVE OF UKRAINIAN GRAPE SELECTION AND WINEMAKING	110
<i>Viacheslav IVASHCHUK</i>	
DEVELOPMENT OF CONTROL SYSTEMS FOR MULTI-PRODUCT DEHYDRATION PLANT	110
<i>Catarina FARIA, António RAPOSO</i>	
ASSESSMENT OF THE TRAINING PROGRAM EFFECTIVENESS IN A PORTUGUESE READY-TO-EAT FOOD INDUSTRY	111
<i>Ekaterina IORGACHOVA, Olga MAKAROVA, Ekaterina KHVOSTENKO</i>	
TECHNOLOGICAL SOLUTIONS FOR STABILIZATION QUALITY OF CONFECTIONERY PRODUCTS WITH DIFFERENT TEXTURES USING WAXY WHEAT FLOUR	111
<i>Nadiya LEVITSKA, Olga KOTCIUBANSKA</i>	
TECHNICAL BASE OF THE UKRAINIAN CONFECTIONARY INDUSTRY IN THE SECOND HALF OF THE 19 th -FIRST DECADE OF THE 20 th CENTURY	112
<i>Ivanna KYRYCHUK, Valerii MYRONCHUK, Yurii ZMIEVSKII, Serhii HOLIACHUK</i>	
INVESTIGATION OF TWO-STAGE WHEY TREATMENT BY NANOFILTRATION AND REVERSE OSMOSIS	112
<i>Maryana KASHKANO</i>	
TECHNOLOGY OF INSTANT GRAIN-BASED PRODUCTS WITH PRESCRIBED PROPERTIES	113

Poster Presentations

Section 1. FOOD EXPERTISE, SAFETY AND TECHNOLOGIES

Subsection 1A Food Expertise and Safety

<i>Nadezhda ZHILINSKAIA, Julia BAZARNOVA, Aleksander SHLEIKIN, Ludmila PESHUK</i>	
THE USING OF BIOINFORMATICS AND COMPUTER MORPHOMETRY IN STUDY OF FUSARIUM SPP. CAUSING POTATO DRY ROT	116

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TECHNOLOGY OF INSTANT GRAIN-BASED PRODUCTS WITH PRESCRIBED PROPERTIES

Nowadays production of instant food that meets the requirements of healthy nutrition is a significant area of research and technological developments in the food industry. It is known, that cereals play a special role in the human diet. Studies on the development of the technology of grain-based food products with balanced nutrient composition are of particular importance for public catering. The question of balance, biological full-value and maximum preservation of beneficial properties of raw materials remains unresolved.

The primary task, which was to develop scientifically based recipe compositions, was solved by analyzing the food and biological value of raw materials recommended for the recipes (grain, nuts, powdered milk etc.). Applied principle of linear programming foresaw the introduction of the objective function (the desired ratio of proteins and carbohydrates) and a group of limitations (content of recipe components). As a result of the computer designing a number of multicomponent recipes was obtained.

Technological processing of grain raw materials included extrusion ($T = 110...130^{\circ}\text{C}$, $P = 2 \text{ MPa}$, $\tau = 4...6 \text{ sec}$), crushing in the hammer mill and sieving (1x1 mm). Crushed and sifted extruded grain was mixed with other recipe components. Determination of biological value of instant porridges was established with the ion-exchange chromatograph Hitachi 835 (Japan). Data were analyzed by using one-way analysis of variance. The significance of differences among samples was established with Tukey's test.

In such a manner, the technology of producing instant grain-based products was recommended. It was showed, that developed products have balanced composition and high organoleptic characteristics. It was proved, that extrusion of grain raw materials enhances the bioavailability of major food components and accelerates cooking time. The rational restoration conditions of dry mixtures were established, basic physical and chemical properties of the developed products were determined.

KEY WORDS: *instant products, extrusion, linear programming, balanced composition*