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8th Central European Congress on Food

Food Science for Well-being

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Collection of abstracts by leading scientists, specialists and young researchers in the field of food science, technology, chemistry, economics and management presented to the Congress

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 NATIONAL FOOD PRODUCTS, PACKING, STORING AND PROCESSING
- **Natural Bioactive Compounds, Functional and Local Food Products**
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Poster Presentations

Section 1.
FOOD EXPERTISE, SAFETY AND TECHNOLOGIES

Subsection 1A

Food Expertize and Safety

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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°C, P = 2 MPa, τ = 4...6 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*