



*Banat's University of Agricultural Sciences and Veterinary
Medicine "King Michael I of Romania" from Timișoara*



Faculty of Food Engineering

BOOK OF ABSTRACT

Student Conference:
„Life Sciences – Food Processing”



Editors:

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Section: Conference cover following topics:

- *Food Engineering*
- *Food Control*
- *Consumer and environmental protection*

07 July 2022





General Programme

04 July 2022 **Registration online**

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15 ³⁰ – 15 ⁴⁵	Oral Communication OC ₃
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16⁰⁰ – 18⁰⁰	Posters

*„Banat’s University of Agricultural Sciences and Veterinary Medicine
“King Michael I of Romania” from Timișoara*



Programme

04 July 2022

Registration online

15⁰⁰ – 15¹⁰

Opening of the Conference

Prof. dr. Adrian Riviş

Dean of the Faculty of Food Engineering, Banat's University of Agricultural Sciences and Veterinary Medicine "King Michael I of Romania" from Timișoara

Prof. dr. Nicoleta Gabriela Hădărugă

Vicedean of the Faculty of Food Engineering, Banat's University of Agricultural Sciences and Veterinary Medicine "King Michael I of Romania" from Timișoara

Oral Communication

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OC2: Physical chemical and sensory characteristics of some autochthonous wines from the West side of Romania
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Section: Food Engineering

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Livia Maria Tomescu, Ariana Cseke, Delia Ivanis, Despina Maria Bordean, Diana Moigreadean, Laura Radulescu, Liana Maria Alda
Faculty of Food Engineering, Banat's University of Agricultural Sciences and Veterinary Medicine „King Michael I of Romania” from Timisoara, Romania
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Faculty of Food Engineering, Banat's University of Agricultural Sciences and Veterinary Medicine „King Michael I of Romania” from Timisoara, Romania
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Faculty of Food Engineering, Banat's University of Agricultural Sciences and Veterinary Medicine „King Michael I of Romania” from Timisoara, Romania



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Faculty of Food Engineering, Banat's University of Agricultural Sciences and Veterinary Medicine „King Michael I of Romania” from Timisoara, Romania
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Faculty of Food Engineering, Banat's University of Agricultural Sciences and Veterinary Medicine „King Michael I of Romania” from Timisoara, Romania
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Faculty of Food Engineering, Banat's University of Agricultural Sciences and Veterinary Medicine „King Michael I of Romania” from Timisoara, Romania
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Faculty of Food Engineering, Banat's University of Agricultural Sciences and Veterinary Medicine „King Michael I of Romania” from Timisoara, Romania



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Faculty of Food Engineering, Banat's University of Agricultural Sciences and Veterinary Medicine „King Michael I of Romania” from Timisoara, Romania
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Faculty of Food Engineering, Banat's University of Agricultural Sciences and Veterinary Medicine „King Michael I of Romania” from Timisoara, Romania
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Faculty of Food Engineering, Banat's University of Agricultural Sciences and Veterinary Medicine „King Michael I of Romania” from Timisoara, Romania
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Faculty of Food Engineering, Banat's University of Agricultural Sciences and Veterinary Medicine „King Michael I of Romania” from Timisoara, Romania
- P₅₀** The pear jam. The capitalizing on the nutritional potential of *Pyrus Communis* fruits
Elisabeth Spataro¹, Daniela-Florentina Marcu², Mihaela-Maria Stanciugelu³, Nicoleta G. Hădărugă⁴, Maria Ionela Spafiu⁴, Camelia Elena Stoianovici⁴, Florina Radu⁴, Ariana Bianca Velciov⁴, Mariana Atena Poiana⁴, Georgeta Sofia Popescu⁴
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OC1

Antioxidant activity and nutritional value of the edible fruits from the
Physalis species – a short review

Sorina Ioana Benea, Cristina Liliana Mitroi, Laura Rădulescu, Ariana Bianca Velciov, Corina Iuliana Megyesi, Adrian Riviș*, Iulia Donatela Stefan, Raymond Nandy Szakal, Dina Gligor, Ana Maria Cretu, Călin Cureleac, Nicoleta Gabriela Hădărugă*

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Fruits of some *Physalis* species are edible and well accepted by consumers, resembling with tomatoes. They are full of valuable biologically active compounds, including antioxidant flavonoids, phenylpropanoids, carotenoids, alkaloids, saccharide esters, phytosterols and energetic values. This study is a short survey on the antioxidant composition of edible fruits from some *Physalis* species, among other nutritional components (carbohydrates, fibers, proteins, lipids, minerals and vitamins). The extraction and quantifying of phenolic and polyphenolic compounds, as well as methods of determination of total phenolic compounds (TPC), ortho-diphenolic compounds, total flavonoids, total anthocyanins, and antioxidant activity by various methods (DPPH·, Trolox, ABTS+·) were reviewed. Moreover, the antimicrobial activities (MIC, MBC) or enzymatic inhibitory activities (α -amylase, α -glucosidase) of *Physalis* fruit extracts were evaluated. These findings support the use of *Physalis* fruits for consumption as raw or in various non- or minimal processed food products such as canned or dehydrated fruits, nectar, syrup, paste or jam.

Keywords: Antioxidant activity, nutritional value, edible fruits, *Physalis* species



OC2

Physical chemical and sensory characteristics of some autochthonous wines from the West side of Romania

Elena Adelina Beuran, Cristina Liliana Mitroi, Camelia Moldovan, Delia Gabriela Dumbravă*, Corina Iuliana Megyesi, Sofia Georgeta Popescu, Despina Maria Bordean, Alina Ciobanu, Maria Gridan, Andreea Kallos, Larisa Rotariu, Georgiana Zaroniu, Nicoleta Gabriela Hădărugă*

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The scope of the study was the evaluation of the quality and sensory characteristics of some wines produced in the West side of Romania. Six wine samples (white, rozé, and red) from the Recaș and Miniș vineyards were analyzed for the acidity index, total acidity, density, ethyl alcohol content and flavoring compounds, as well as by sensory analysis using a consumer panel. The most important sensory parameter was the color, followed by the clarity. Rosé wines were very well assessed by sensory analysis, having scores of 4.3-4.7 by the 5-1 score scale. On the other hand, the total acidity was in the range from 3.88 ± 0.26 to 5.75 ± 0.11 g tartaric acid/L for a red and rosé wine samples, respectively. The pH and relative density were 3.17-3.87 and 0.9558-0.9733, with highest values for rosé and red wines from one vineyard.

Keywords: Physical chemical, sensory characteristics, autochthonous wines



OC3

Innovative vegan food products based on common medlar (*Mespilus germanica* L.) fruits and honey

Iasminca Birta, Marius Ioan Cugerean, Cristina Liliana Mitroi, Laura Rădulescu, Ariana Bianca Velciov, Corina Iuliana Megyesi, Ana Maria Cretu, Călin Cureleac, Adrian Riviș*, Nicoleta Gabriela Hădăruță*

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The common medlar (*Mespilus germanica* L.) fruits gained interests in the recent years, especially for the food industry, due to the higher contents on antioxidant compounds. The goal of the study was to obtain an innovative vegan common medlar and honey based bars with high nutritional value. Autochthonous common medlar fruits (Banat region, Romania) were evaluated for their antioxidant activity point of view (DPPH· assay) as well as for their physical and sensory characteristics (edible fractions, appearance, transversal appearance, taste, smell/flavor, color, the latest being the most favorable for their consumer acceptance). The antioxidant activity (expressed as the radical scavenging capacity) had a value of 62.9% and was similar to other autochthonous fruits (apples, 68.5%), but higher than other fruits used for comparison (plums and pears, 46.4-51.6%). Taking into account these findings, innovative vegan bars were obtained using common medlar fruit pulp and honey at a mass ratio of 2:1, as well as nuts, pistachio and chia seeds for the bar core. The bar shell was obtained from dried apple foil/fibers and finally packaged in ecologically boxes. Vegan bars were very well assessed by sensory analysis using the consumer panel, the most important parameters for the acceptance being the appearance and flavor.

Keywords: innovative, vegan food, (*Mespilus germanica* L.), fruits, honey



OC4

Nutritional and sensory properties of almonds and almond-based spreadable food products

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Almond (*Prunus dulcis* L.) is the term used for both the tree and the corresponding edible seed, which is widely used in the food industry. There are many varieties (e.g., “Tuono”, “Guara”, or “Nonpareil”) grown through the world, sweet almonds being better accepted by consumers. They are rich in nutritional components including carbohydrates, proteins and lipids, having almost 20% of the recommended daily intake for B and E vitamins, as well as minerals (Cu, Fe, Mg, Mn, P and Zn) and phytosterols (β -sitosterol, campesterol or sitostanol). They are consumed as raw and roasted seeds, or as various food ingredients (flour, oil, milk, butter and syrup). The aim of the study was to assess the quality of the raw almonds (different varieties) based on literature survey and to select the most appropriate ones for obtaining an innovative almond based cream products. Almonds from “Ferragnes”, “Tuono”, “Guara”, “Cristomorto”, “Nonpareil”, “Marcona” and “Valencia” varieties, with high oleic acid content of 72.2-80.0% (as fatty acid methyl esters determined after derivatization, according to literature) were evaluated and the “Marcona” variety was used for obtaining innovative almond cream products with onion and honey. The composition was obtained from raw almonds, almond milk, honey, salt and onion flakes/paprika/ginger/orange at a mass ratio of 30:5:5:2:1. The sensory analysis of the spreadable almond cream products revealed the consistency for the almond and onion based products, the color and appearance for the almond and paprika based products, and the flavor and taste for the almond and ginger or orange based cream products. The latest almond cream products had the best consumer acceptance values.

Keywords: Nutritional, sensory properties, almonds, almond-based



Posters



Section: Food Engineering

P1

Study on the evaluation of the quality of some sunflower and pumpkin seeds

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Many studies have shown that pumpkin seed protein contains all the essential amino acids, with arginine and glutamic acid as the main components. Consequently, pumpkin seeds are considered to be a good source of vegetable protein.

Roasting at a certain temperature can increase the sensory and nutritional attributes of pumpkin seeds. After roasting, the concentrations of total phenols, total flavonoids and antioxidant properties of pumpkin seeds are improved, which proves that roasting improves the biological activity and antioxidant properties of pumpkin seeds.

The aim of this study was the comparative analysis of eight varieties of sunflower and pumpkin seeds, based on the nutritional information and the results obtained following the analysis of the mineral content by the FRX method.

All pumpkin seed varieties have a lower fat content than sunflower seeds. Pumpkin seed varieties recorded the highest values of protein content compared to those recorded by sunflower seed varieties. From the FRX analysis of the samples we observe that all the seed varieties have very high K contents. Regarding the Ca content, the product “Cooked and salted sunflower seed kernels - Bulgaria) recorded the highest value. FRX analysis shows that all seed varieties have high Fe, Zn and Mn contents.



In conclusion, the varieties of sunflower and pumpkin seeds analyzed stand out for their high nutritional values, being recommended in the daily diet due to their high protein and mineral content.

Keywords: FRX method, minerals, nutritional value



P2

Evaluation of heavy metal content in different teas varieties

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Abstract. For many centuries, only the Chinese knew about the wonders of tea, but eventually the habit of drinking tea spread throughout Asia and then around the world. The research aims to analyze the content of heavy metals in different teas (Echinacea, Lavander, Chamomile and Mint), the degree of tea's moisture, as well as the creation of an innovative product "Amigo Tea" a natural sweetener, not only to sweeten the tea, but also able to offer a unique aroma and a reddish coloration due to the presence of ginseng.

Keywords: tea, ginseng, *Sambucus* flowers, heavy metals.

Introduction. The present study describes Echinacea, Lavander, Chamomile and Mint teas in terms of origin, diversity, nutraceutical and pharmaceutical importance and also the potential heavy metals present in these teas. At the same time, the study covers the methodology to prepare an innovative product, named "Amigo Tea, a sweetener based on honey, *Sambucus* flowers, black mulberry and ginseng", a product with many benefits for the consumer, due to the fact that all these ingredients provide a wide contribution of essential microelements (Fe, Mn, Zn, Cu, Mg) .

Materials and methods. Honey (polyflower), Teas (Echinacea, Lavander, Chamomile and Mint), mulberries, and *Sambucus* flowers (elderberries flowers) were of Romanian origin and ginseng of korean provenience. The determination of moisture content was performed using the thermogravimetric method using Sartorius thermo-balance and the heavy metals content using Hitachi X-Met8000 XRF spectrophotometer. The obtained experimental data were compared with the nutritional databases (FoodB and USDA) as well as with different recent research results.



Results and discussions. All four analysed Teas are characterized by a high magnesium content, which is recommended for consumers who need to naturally increase the levels of magnesium. Unfortunately the presence of lead and cadmium (figure 1) confirms the fact that it is extremely important to use Teas, free from heavy metals [1] and that many of the Teas available on the market are insufficiently investigated and may harm the health of the consumers.

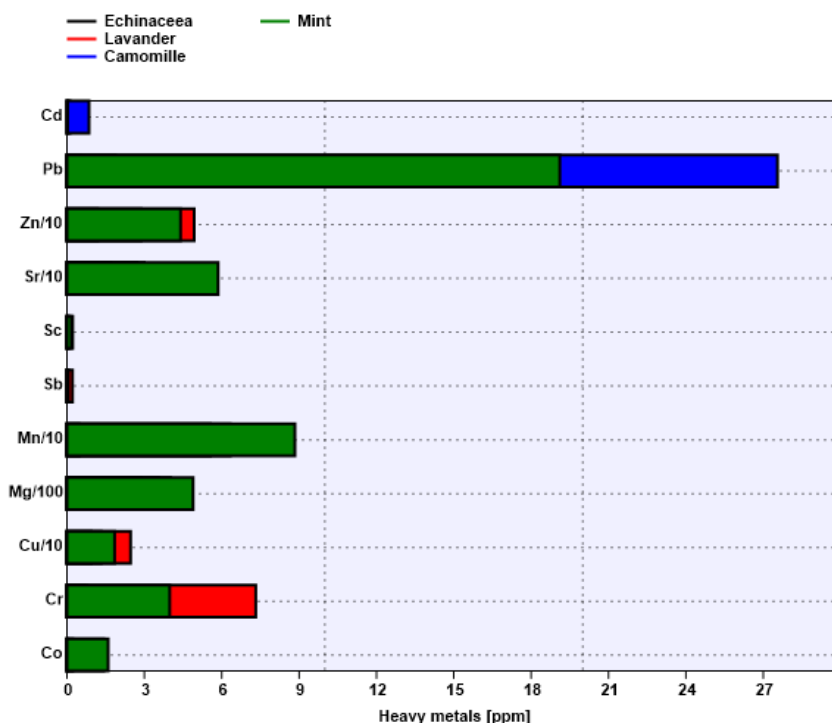


Figure 1. Barchart representation of heavy metals in investigated teas

As we can observe the highest level of lead and cadmium is present in chamomille, chromium , copper and zinc in lavender , scandium and antimony in echinacea.



The micro and macroelements, as well as heavy metals present in the herbal tea powders are released in infusion in different percentages [1, 2], depending on the types of plants, the origin of plants and the level of pollution of the area in which the plants cultivated. It is important to pay attention to the migration of metallic elements into parts of the plant intended for consumption. Medicinal plants grown in soils polluted with heavy metals can raise quality problems, which is why they require rigorous control.

Conclusions. Tea, worldwide, is the most commonly consumed beverage, in addition to water. Most teas have beneficial effects, such as: antioxidant, anti-inflammatory, antimicrobial, anticancer, antihypertensive, neuroprotective, cholesterol-lowering and thermogenic properties.

Controversy over the benefits and risks of drinking tea exists [2], but it's unlimited health-promoting benefits outweigh the few reported toxic effects. However, with the significant increase in scientific investigation of the role of tea in human life, this review aims to highlight the beneficial effects and risks associated with tea consumption.

The innovative sweetener created is recommended for categories of consumers who prefer honey over sugar and who want fine, unparalleled flavors.

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P3

Evaluation of the mineral content of some teff, buckwheat and flaxseed flours

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Abstract. The aim of the paper is to highlight the mineral content of some teff, buckwheat and flaxseed flours. low mineral content can be improved with the use of mineral-rich ingredients such as buckwheat or flaxseed flour. The mineral fingerprint recommends using teff mixtures to obtain flour with a wider range of minerals, which gives the food a higher mineral value. The consumers show a predilection to superior, low fiber breads over wholegrain fiber-rich bread.

Keywords: minerals, buckwheat, teff and millet, flax

Introduction. Individuals may restrict gluten from their diet for different reasons such as the improvement of gastrointestinal and non-gastrointestinal symptoms, as well as the belief that restricting gluten from the diet represents a healthy lifestyle. However, evidence has shown that gluten avoidance may be beneficial to some patients with gastrointestinal symptoms similar to those found with NCGS. However, high quality evidence supporting gluten avoidance for the symptoms of NCGS is not convincing [2].

As teff grain flour was characterized by its excellent nutritional value as compared to other cereal flours, the effects of the substitution of wheat flour with different levels of teff grain flour on the physico-chemical, bread making properties of the flour were investigated and have proved that breads supplemented with teff flour, up to a 5% level, are organoleptically and nutritionally acceptable. Teff is mainly cultivated for its small seeds or grains, which are used in making a staple food known as injera, a spongy flatbread



made from fermented flour, as well as in the making of a traditional porridge and an alcoholic beverage.

Buckwheat is normally consumed in seed form. It is rich in carbohydrates, proteins, amino acids, fatty acids, vitamins, minerals, and imino-sugars. The two most commonly consumed buckwheat varieties are common buckwheat and Tartary buckwheat.

Linseed (*Linum usitatissimum* L), also called flaxseed, has significance due to its nutrients and pharmaceutical uses. It is used for edible and lightening purposes in some Asian countries and can be used as a substitute part of animal fat in poultry diets [1].

Materials and methods. All the materials were of Romanian origin and available on the market. The minerals concentration in different flours was analyzed using Hitachi X-Met8000 XRF spectrophotometer. Multivariate statistical techniques were used to analyze the literature and experimental data [3].

Results and discussion. The dehydration curves humidity and the variations of the millet, flax and buckwheat samples analyzed with the Sartorius thermobalance are presented in figure 1.

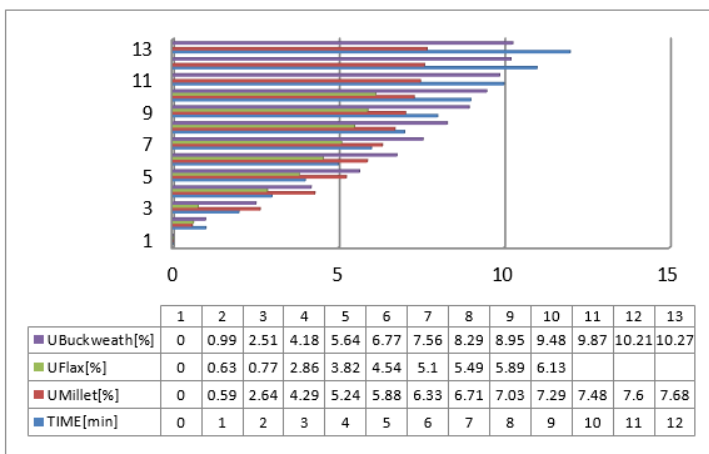


Figure 1. Dehydration curves of the analyzed flour samples



It is observed that buckwheat flour has the highest moisture content (10.27%), while flaxseed flour has the lowest content (6.13%). Millet flour is characterized by moisture of 6.13%.

The study compares the teff, flax and buckwheat flours, but also the millet flour and compares the data from the literature, or databases with the values obtained in the laboratory.

We noticed that there is relatively little bibliographic data for the contents of micro and macroelements in flax and buckwheat flours. If we compare teff flour of different varieties, we notice that there is an abundance of data on its mineral content.

The Bar chart analysis allows us to identify the minerals specific to teff flours, namely potassium, phosphorus and palladium. The mineral fingerprint recommends using teff flour mixtures to obtain flour with a wider range of minerals, which gives the food a higher mineral value.

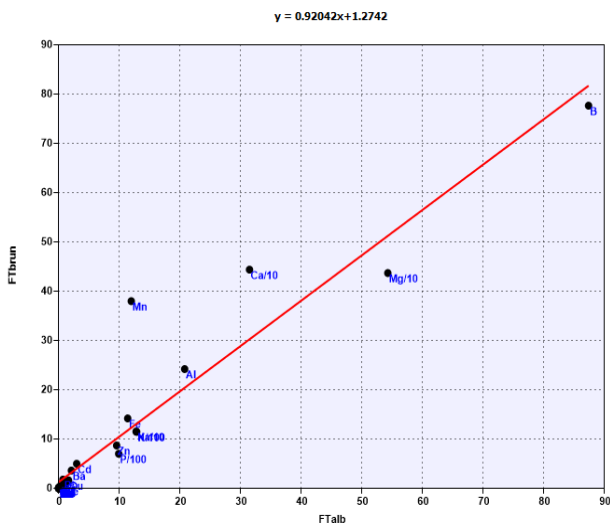


Figure 2. Graphical representation of the generalized linear mathematical model



Figure 2 shows the generalized linear model applied to the value data corresponding to the concentrations of minerals in teff flours, as well as the equation with which the proportions of teff flours can be calculated to create flour mixtures, correlated with the need to select minerals according to diet or health of the consumer. Based on the evaluation millet flour cannot be replaced by flax and buckwheat flours, but mixes can be created to add more minerals to the flour base.

White teff flour is characterized by a high content of Zn, V, Na, P, K, Mg and B, while brown teff flour is rich in Mn, Fe, Cu, Ba, Al and Ca, reason for which it is recommended to use teff flour mixes to obtain a wider range, which gives the food a higher mineral value.

Conclusions. The specific minerals of teff flours are: potassium, phosphorus and palladium, these being the minerals which help to create the specific fingerprint, able to help to identify teff flours from other flours, but do not help to identify the assortment of teff (Bar chart analysis). Buckwheat flour is also rich in complex carbohydrates, vitamins B, K, P and minerals: zinc, copper, manganese, iron, phosphorus, magnesium, also contains gluten. Flaxseed flour is a nutraceuticals food, rich in calcium and proteins. Millet and flax flour behave similarly to dehydration, which helps us to identify a way to combine them in order to obtain versatile foods. Cluster analysis of close neighbors proves that millet flour has a mineral composition relatively similar to flax flour, but less similar to buckwheat flour.

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P4

Evaluation of the content of micro and macroelements in different oriental condiments

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Abstract. The origin and use of most culinary plants and spices are in the Asian areas of the globe, areas known for the diversity of culinary plants and spices, where the most fragrant foods are produced, later culinary plants and spices being imported and used worldwide. Most spices and herbs, especially cumin, ginger, pepper, cinnamon, basil and garlic, used for thousands of years in India and the eastern geographical areas, are recognized for culinary and nutraceuticals purposes, due to their pharmacological and physiological properties.

The research aims to analyze the importance of oriental spices from culinary and nutraceuticals point of view, conducting comparative studies between cumin and caraway and to create an innovative product "Orange jam, flavored, with cumin".

Keywords: caraway, cumin, macro and microelements, innovative jam

Introduction. The proposed study makes a presentation of oriental spices in terms of the origin, importance, diversity culinary, pharmaceutical and medical importance. Subsequently, a brief presentation is made of the macro-, micro- and ultra-micro-elements, present in plants and spices, respectively.

The study also proposes a series of comparative analyzes between the nutritional values of cumin and caraway seeds and also presents the preparation methodology of the "Orange jam, flavored, with cumin". The innovative product is different from other similar varieties of jam by texture, flavor, taste and color and is recommended in various forms, whether as a dessert or as appetizer for a festive dinner.



Materials and methods. Both spices: cumin and caraway available on the Romanian market were analyzed in the Food Analysis laboratory using Hitachi X-Met8000 XRF spectrophotometer [1] and thermobalance Sartorius and the results were compared to FoodB and USDA data, as well as different scientific papers.

Results and discussion. Multivariate statistical techniques [2] were used to analyze the data regarding the moisture dehydration process of cumin and caraway seeds (cluster analysis as a method of grouping variables (Figure 1).

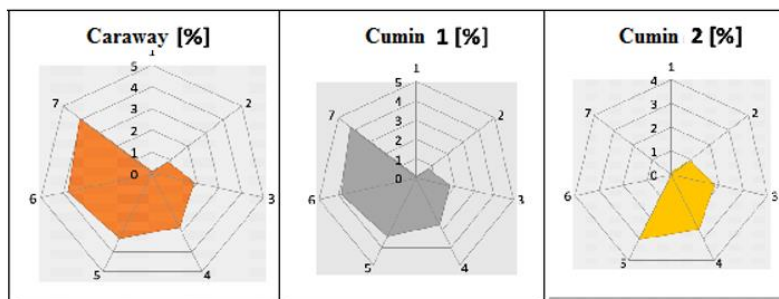


Figure 1. Evolution of the dehydration process in the case of evaluated seeds

As we can see the graphical representations (Figure 1), the cumin 1 and caraway samples have a relatively similar dehydration behavior compared to the sample cumin 2, which differs statistically significantly from the first two. This dehydration behavior can be explained by declared origin and different quality class of the seeds.

In connection with the process of obtaining orange jam, flavored with cumin, a series of analyzes were performed regarding the nutritional values, micro and macroelements of the proposed innovative jam and the results recommend it for consumption: high content of minerals (Mn, P, Mg) Limonene, Retinol, Hesperidins, Threonine, and Beta-Carotene.



Conclusions. The innovative product shows high nutritional value due to its interesting composition, which recommends it for consumption. Due to its nutraceuticals value it has recommended the diversification of the product "Orange jam, flavored, with cumin" by adding lemons and caraway, to increase the number of benefits.

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P5

Development of Technology for the Production of Sausage Produce Using Secondary Collagen-Containing Raw Materials

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One of the main requirements for modern technologies is to expand the range of meat products by creating combined products with a balanced composition of food and biologically active substances. The purpose of the study was to develop a technology for the production of such combined meat products.

The research used secondary meat raw materials of the meat processing industry: pig meat, flank and other beef muscle tissue of the second grade, which, after fermentation by a consortium of microorganisms consisting of the following cultures: *Lactobacillus bulgaricus*, *Bifidumbacterium siccum*, *Staphilococcus carnosus*, were used instead of the main meat raw materials in the production of sausages.

The following indicators of ready-prepared products were studied: organoleptic properties, chemical, vitamin and mineral composition, toxicity and harmlessness, storage duration. The results showed that the use of this consortium of microorganisms in the production of sausage products made it possible to use secondary collagen-containing raw materials for processing. The positive influence of the proposed biotechnological method of processing meat raw materials on the organoleptic, physical- chemical, structural-mechanical, microbiological characteristics and biological value of the finished product was revealed. It was found that the use of a consortium of microorganisms increased the quality of finished products.

In addition, the proposed technology has the potential to reduce the cost of production and increase the share of waste-free production in the meat processing industry.



Keywords: Collagen-containing raw materials; Biomodification; Combined meat product; Lactic Acid bacteria

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P6

The influence of the atmosphere on fruit preservation methods

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The main aim of the work is to identify the phytopathogenic microorganisms that can appear on fruits stored in warehouses and the dependence of the microbial load on the storage atmosphere.

Microbial tests were carried out by taking air samples, respectively samples from the surface of fruits kept in warehouses. The analyzed samples were taken from warehouses with controlled atmosphere and from silos from the same fruit farm in Timiș county. A significant increase in microbial and fungal load was found in aero microflora samples and fruit surface samples for samples taken from conventional silos compared to samples taken from controlled atmosphere warehouses

Among the contaminating microorganisms that cause losses to fresh fruit production, the most common are microscopic fungi - filamentous fungi and yeast fungi. Preservation of fresh fruit, at this moment, is done with the help of low temperatures. They must be adjusted so that the optimal value is found for each of the varieties harvested and kept in warehouses.

Keywords: preservation of fruits, microorganisms, warehouses.

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P7

Improving the organoleptic and structural-chemical properties of semi-smoked sausages

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The purpose of the study was to test the original technology of the semi-smoked sausages production adding goji berries at different concentrations, and to assess the technological risks in the production of sausages. 40 pieces of semi-finished sausages were divided into 4 groups, 10 pieces each. The sausages for the first control group were made according to the traditional recipe. The remaining three groups were experimental, with the addition of goji berry at different concentrations (30, 50 and 70 g per 100 kg of meat).

The prepared samples were analyzed for the content of particulate matter and water using hydrological methods. All experimental samples were recorded with a decrease in water activity by 1.2 times compared with the control ($p \leq 0.05$ between the 1st and 4th groups). A new technology to produce semi-smoked sausage adding goji berries powder at a concentration of 0.3, 0.5, and 0.7% to meat is proposed and tested. The addition of goji berries provides solidity to the sausage samples, as well as better organoleptic and structural-chemical properties compared to the control.

Keywords: goji berries, production technologies, semi-smoked sausages, water activity

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P8

Quality of some meat dishes – Leberwurst

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Meat dishes are suitable for every moment of the day, adding aroma, taste and sophistication to any special occasion. The diverse assortment manages to meet all requirements and tastes, be they conservative or modern, all adapted to the concept of healthy products, balanced in protein.

The purpose of this work was to determine the critical control points when obtaining a certain amount of the "leberwurst" assortment and to carry out a comparative study from an informational and nutritional point of view for this kind of product.

To carry out this study, we purchased three types of leberwurst from different companies (Ifantis, Banat Bun, Vascar) which we analyzed from the organoleptic point of view, the informational content and the nutritional characteristics presented on the packaging. From an informational point of view, we analyzed the content of the labels of the three varieties of leberwursts (manufacturer name, product name, storage conditions and list of ingredients), and we compared the nutritional characteristics with each other and with the admissibility standards for this product.

From an organoleptic point of view, we followed: consistency, color, taste and smell, appearance on the section, exterior and shape.

Conclusions: 1. The labels of the three types of leberwurst are in accordance with the legislation in force and the necessary information can be found in them according to preferences or needs. 2. The organoleptic characteristics of the three types of leberwurst are according to the standards of admissibility for this type of product. 3.



In the leberwurst manufacturing technology, critical control points can be identified along the entire technological process, starting from the reception of raw materials and continuing with the preparation of the composition, filling the membranes, pasteurization, storage and delivery, but they can be avoided by using some food safety systems such as the HACCP system. 4. From a nutritional point of view, the best quality leberwurst is the one produced by the Ifantis company, which has the highest protein content (12.38%), closely followed by the one obtained by the Vascar company (12.3%); from the energy point of view, the highest value was calculated for the Vascar product (300.07 kcal), followed by the Ifantis product (285.5 kcal), at each product there is a small difference in addition to the one declared on the labels.

Keywords: leberwurst, quality, comparative study



P9

Gluten-free Banana Cheesecake

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Currently, there are many people who cannot consume gluten, which causes them health problems, such as celiac disease. There are very few confectioneries on the market that offer gluten-free products to consumers, which is why we came to meet them with a gluten-free banana cheesecake. Cheesecake-type desserts are particularly appreciated by consumers today because they are relatively easy to obtain, no baking is required, and they are particularly tasty.

The aim of this work was to obtain and analyze from a sensory point of view the cheesecake by comparing it with another type of commercial cheesecake and calculating the nutritional value of a portion of 100 grams of the product.

The innovative character of this product lies in the choice of bananas and carefully other selected ingredients used to create gluten-free banana cheesecake, as well as facilitating a more diversified menu for people who cannot consume gluten. Gluten-free cheesecake consists of products that do not contain gluten proteins, such as: coconut flakes, oatmeal, dates, cashews, bananas, coconut cream and lemon juice.

The nutritional values calculated for 100 grams of product are: proteins 73.3 g/100 g, lipids 252.2 g/100 g; carbohydrates 37.4 g/100 g.

Conclusions: 1. Gluten-free banana cheesecake is a pleasant, fresh, aromatic cheesecake that can be included both in the diet of those who cannot consume gluten and in that of vegetarians. 2. The innovative character of the gluten-free banana cheesecake consists in the selection and mixing of the best quality raw materials, which enter into the composition of the product.



3. Following the sensory analysis carried out by a group of 10 evaluators, it was found that the gluten-free banana cheesecake has superior flavor, color, smell, consistency compared to a commercially bought cheesecake, obtaining an average of over 4 for all the sensory characteristics analyzed. 4. The energy value calculated for a portion of 100 grams of banana cheesecake is 4176.93 calories.

Keywords: gluten-free cheesecake, bananas



P10

Development and characterization of some gluten-free biscuit assortments

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Among the modern food problems that more and more consumers are unfortunately facing is gluten intolerance. As a result of this situation, in recent years, within the national and global food industry, more and more gluten-free food products have been developed, products that seek to bring the necessary intake of nutrients and to corresponds also from organoleptic point of view. The first purpose of this work was to obtain two innovative assortments of gluten-free biscuits, without added sugar: one based on coconut flour (B1) and the second based on walnut flour (B2). Erythritol was used as a sweetener. A second aim of the work was to analyze the finished products obtained from a physico-chemical, nutritional and organoleptic point of view. The physico-chemical analysis followed the content of total polyphenols (Folin-Ciocalteu assay) in the finished products and in the raw materials, their antioxidant activity (DPPH method), moisture content and water absorption capacity during storage. Coconut flour had a slightly higher content of total polyphenols (98.63 ± 0.26 mg gallic acid/g) than walnut flour (94.26 ± 0.21 mg gallic acid/g), respectively the B1 biscuits had a slightly higher content in these compounds (35.41 ± 0.07 mg gallic acid/g), than B2 biscuits (34.39 ± 0.07 mg gallic acid/g). Among the two types of flour, walnut flour had the strongest DPPH free radical scavenging activity (93.88 ± 0.24 %). Among the finished products, the alcoholic extract from B2 biscuits had the strongest DPPH free radical scavenging activity (88.47 ± 0.03 %). B1 biscuits showed 3 times higher moisture content (30%) than B2 biscuits (10%) which, however, absorbed 2.67 times more water during storage than B1 biscuits. B2 gluten-free biscuits had a higher total fat content and slightly more protein (17.02 g/100g and 3.31 g/100g respectively) compared to coconut flour gluten-free biscuits (10.71



g/100g and 3.08g/100g). Conversely, B1 biscuits were richer in total carbohydrates (19.65 g/100g), dietary fiber (8.78 g/100g), sugars (4.69 g/100g) than B2 biscuits (15.56 g/ 100g, 5.08 g/100g, respectively 0.85 g/100g). The obtained gluten-free biscuit assortments were well appreciated by the tasters panel (scores for all analyzed sensory characteristics were above 4), between the two finished products there were no important differences from an organoleptic point of view.

Keywords: gluten -free biscuits, polyphenols, antioxidant activity. coconut flour, walnut flour.



P11

The beneficial effects of raspberry jelly on the human body

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The aim of the paper was to create an authentic food - raspberry jelly, and to characterize it from a sensory and physicochemical point of view. Thus, we decide to obtain a food as natural as possible, with special nutritional qualities due to the reach content of nutrients from raspberries. Without the addition of preservatives or chemical sweeteners, a "jelly" type product was created, made of raspberry, which is a rich source of valuable vitamins (A, D, C, E, B3, B2, B6) and minerals (K, Mn, Cu, Fe, Mg) and helps to reduce the risk of illness, of obesity and diabetes.

2 types of jelly were obtained (raspberry jelly with raw sugar and raspberry jelly with stevia sugar), which were subsequently analyzed from sensory and physicochemical point of view, noting the following aspects:

- The most appreciated characteristic of raspberry jelly with stevia sugar was the smell, with an average score of 4.5 points, being followed by the appearance, with a slight difference (4.4 points). The least appreciated was the taste with an average score of 4.1 points;
- The most appreciated characteristics of raspberry jelly with raw sugar were the smell and the taste with an average score of 4.5 points, respectively 4.4 points, but also the appearance with a score of 4.2 points. Color and consistency scored lower than the characteristics listed above;
- Regarding the physicochemical analyzes performed (determination of total acidity, sugar content and refractive index) for the 2 samples of raspberry jelly, higher values were obtained in the case of raspberry jelly with stevia sugar, for all 3 monitored characteristics.

Keywords: raspberry, jelly type products, stevia sugar.



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P12

Sensory and physicochemical characterization of an assortment of homemade salami with added nuts

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The aim of the paper was to create a new, innovative product - homemade salami with added walnuts and subsequently the sensory and physicochemical characterization of the obtained product. Salami is one of the most loved and consumed foods, due to its flavor, which makes it appreciated both alone and in combination with other food products. The main idea of our work was to obtain a natural product, with benefits and nutritional qualities on the human body due to its components: meat and walnuts. When obtaining salami, only one species of meat was used as raw material, namely pork meat, in order to obtain a product with high percentage of protein. The final product did not contain additives and preservatives, which over time cannot have harmful effects on the human body.

To obtain the salami, an own recipe was used, which was finalized after numerous trials and tastings. The sensory evaluation of salami with walnut was carried out with the help of 10 tasters, who completed the sensory sheet following the organoleptic examination of the product. Also, the obtained salami was subjected to physicochemical analyses, determining the water content, the salt content (using the Mohr method), the titratable acidity and the presence of adulterations. The determinations made highlighted the following average values: water content of 2.4%, salt content of 1.287% and titratable acidity of 0.15%. All these values fall within the national standards in force.

Keywords: walnuts, salami obtaining, homemade salami.



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P13

Sensory and physicochemical characterization of some sorts of natural juices

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Vegetable and fruit juices are being used more and more for the benefits they bring to the human body. They play a particularly important role in human nutrition, because they have an impressive nutritional value, a fabulous taste and aroma, improve appetite and bring benefits in the assimilation of food. Vegetable and fruit juices are an important source of energy that ensures the normal conduct of daily activities and the maintenance of health.

The aim of the paper was to obtain juice type products and highlighting the nutritional value of these juices on the human body. After obtaining, the juices were subjected to sensory analysis, but also to some physicochemical analyses.

After sensory evaluation it can be concluded that the most appreciated characteristics in case of artisanal orange juices were the smell, the color and the taste of these products. These three characteristics obtained a score of over 84% of the maximum tunable score, while the appearance and presence of foreign bodies obtained lower average scores. Physicochemical analysis of the obtained orange juices involved the determination of total acidity, of vitamin C and the determination of sugar content. Thus, the total acidity of the investigated orange juices varied between 0.535 - 0.965 g malic acid / 100 mL, the highest value being recorded in the case of artisanal orange juice. Also, this type of juice recorded the highest value for vitamin C, namely 57.4 mg / mL. Regarding the sugar content of the analyzed samples, the highest value (11.2°Brix) was recorded for the orange juice purchased from supermarket 2, and the lowest value (10.3°Brix) for the artisanal orange juice.



Keywords: juice, orange juice, physicochemical characterization of juices, benefits of juices.

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P14

Characterization of Feteasca Neagra red wines from Romanian vineyards

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Feteasca Neagra, Romanian grape variety, is cultivated in the most regions of Romania (especially in the south of Moldova and eastern Muntenia) but today, it is grown in many countries of the world. Of this grape variety can produce exceptional red wines with a pronounced typicity. The aim of this study was to evaluate the sensory properties, the physico-chemical characteristics and antioxidant activity of some Feteasca Neagra red wines from three Romanian viticultural regions: Recas Wineries, Cotnari Vineyards and Budureasca Vineyards. The physico-chemical characteristics such as total acidity, alcoholic strength and sugar content were investigated. Recas winery, located in the west of Romania in the region of Banat, has focused mainly on modern dry wines of high quality awarded with diplomas and medals at national and international contests. Feteasca Neagra red wines have fine-grained texture with the colour mid-deep purple. Cotnari Vineyard is one of the most famous vineyards in Romania; is part of the Moldova Plateau wine region. In Cotnari Vineyard can be found only old Romanian grape varieties like Feteasca Neagra. At Cotnari, the wines are too noble to be drunk. Budureasca Vineyards is located in Dealu Mare, Romania with the great climate and soil in order to create the best wines of the highest quality. Feteasca Neagra red wines show a range of flavors, fine tannin structure, good acidity, average to full body and high alcohol level depending on the winemaking techniques and especially on the location of the vineyard. In conclusion, all wines sample had a high alcoholic grade for this type of red wine.

Keywords: red wines, romanian vineyards, sensory properties, antioxidant activity



P15

Natural alcoholic beverages using as traditional alcoholic beverages in Romania

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Consumption of some alcoholic beverages is the socio-cultural tradition in Romania also as across of the globe. The majority of the fermented drinks are fruit-based (plums, apples, pears, etc) and making a beverage unic taste. This work is focused on preparation of traditional alcoholic beverages (TABs) used by regional communities and not only and were analyzed in terms of sensory properties, total acidity, total dry extract, relative density and the alcoholic degree. *Tuica* is a traditional Romanian spirit prepared from October to December only from fermented and distilled plums. The plums must be left for fermentation in large barrels for 6–8 weeks and distillation must be done in a copper still using the wood as traditional fire source. The temperature is controlled traditionally and this process results a beverage in two grades: normal (24–40% alcohol) and very strong (50–65% alcohol by volume). *Palinka* have a pleasant taste of alcohol with as apricot, plum or whatever fruit it was made. In Romania, the word *rachiu* or *rachie* is used to refer to a similar alcoholic beverage as neighboring countries, often a strong fruit-based spirit. However, the more commonly used terms for similar popular beverages are *tuica* and *palinka*. Normally, *tuica* is colorless but is kept in wooden barrels (oak or mulberry) for extra aroma and a golden color. The alcoholic content is usually between 40 to 50% (v/v) alcohol, though higher or lower concentrations are found. TABs are considered as foods and medicines.

Keywords: alcoholic beverages, sensory properties, alcoholic degree



P16

Characterization of some Chardonnay white wines

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Chardonnay is one the world's most popular grapes variety and, at the same time, is the world's most popular white wine. The purpose of this study was to investigate the some quality characteristics like total acidity, total dry extract, alcoholic strength and sugar content from some wines Chardonnay produced in Romania (Domeniul Coroanei Segarcea, Domeniile Samburesti and Oprisor Winery) and Moldova (Purcari Vineyard and Cricova Winery). Chardonnay wine samples were collected from vintages from 2015 to 2021. Depending on where it grows and how it's made, Chardonnay is a dry wine, with moderate acidity and alcohol, with different flavors. As it ripens the grapes to lose quickly acidity; so, the time of harvesting is important. The primary flavors which derive directly from the grape is develop into riper, richer fruits and swing from apple to tropical fruits. A very ripe Chardonnay grapes have flavors from tropical fruits like pineapple, guava and mango. Secondary Chardonnay notes come from the winemaking process. The winemaking procedure can influence the white wine quality. While many wines can benefit from a few years of bottle aging, the Chardonnay are meant to be consumed in their youth. In conclusion, the wines obtained from Chardonnay grapes variety grown from cold climates were higher in acidity and have been more aromatic than those from warmer regions.

Keywords: white wines, Chardonnay, quality characteristics



P17

Valorization of orange waste resulting from the fruit canning industry -
Orange peels jam

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Fruits waste such as peel, seeds, membranes, stems and leaves have a high waste rate worldwide. In high-income countries, the disposal of by-products is about 30%, while in low-income countries it exceeds 60%. Food losses occur during production, processing, retail or due to improper disposal by restaurants and end consumers. However, the peels, membranes and seeds have a high nutritional content, suggesting a potential for addition as an ingredient in food products.

The orange is a very nutritious food, a source of phytochemical compounds such as vitamin C, flavonoids and carotenoids, which also give it its antioxidant property. The orange residues (peels) are sources of bioactive compounds, especially flavonoids and phenolic acids. Previous research has shown the positive effects of adding citrus peel to several products such as biscuits, rolls, marmalade, jam and yoghurt.

The present research proposed the development of a new recipe for jam and the use of orange peels as a raw material, as well as the development of the technological process, the materials chart-flow, the determination of the physic-chemical properties, and the impact on consumers by sensory analysis.

Following the sensory analysis of the products obtained, the samples of jam with orange peel with regular sugar and with coconut sugar obtained points that fell between the limits of moderately pleasant (4) and extremely pleasant (5) on the hedonic scale with 5 points.

The physical-chemical analysis of samples was carried out within Interdisciplinary Research Platform of *University of Life Sciences "King Mihai I" from Timisoara*.



The water content of the studied samples was between 27.6% (jam with regular sugar) and 28.2% (jam with coconut sugar), values that fall within the limits established by the norms in force.

Regarding the content of ash and Vitamin C, determined in the jam from orange peels, values between 0.41% - 0.68% (ash) and 68.8 mg/100 g and 87.3 mg/100 g (Vitamin C), certifying that the products obtained have special nutritional properties.

The samples of jams from orange peels, obtained in this reaserch, have special nutritional properties, they correspond to the quality and food safety requirements, required by the canning industry, whose tendency is to obtain new innovative products, valuable for the human body.

Keywords: Orange peels, jam, fruit, industry



P18

Grapefruits waste valorization as nutritional jam

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Food waste has become a major problem worldwide in recent times. Considerable amounts of food are wasted at various stages of the food production and consumption chain. Food waste is a major problem affecting public health, the environment and the economy in the context of population growth and diminishing natural resources. Waste occurs at all stages from harvest to consumer, and advanced food preservation techniques are required.

The topic of the research was chosen after exhaustive literature study, the chosen product - *grapefruit peels jam*- representing an alternative for the recovery of waste from the fruit processing industry.

In the production technology of the studied products, grapefruit peels were used as raw material, and to give a pleasant taste, two types of sweeteners were used: normal beetroot sugar and xylitol. A product was obtained with a consistency characteristic of jams, with special sensory properties and high nutritional properties.

For the *Overall Acceptability* criterion, the average score was 7.9 points, for the grapefruit peel jam sample with xylitol, compared to the average obtained for the grapefruit peel jam with normal sugar, of 7.2 points.

La criteriul *Acceptabilitate generală*, media punctajelor acordate, a fost de 7,9 puncte, la proba de dulceață din coji de grapefruit cu xilitol, comparativ cu media obținută de proba de dulceață din coji de grapefruit cu zahăr cristal, de 7,2 puncte. The water content of the studied samples was 21.12% in the jam with normal sugar and 14.06% in the jam with xylitol, values that fall within the limits established by the norms in force.



The grapefruit peel jam samples recorded an ash content of 0.32% in the crystal sugar sample and 0.66% in the xylitol sample, and the vitamin C content recorded a value of 28.6 mg/100 g in the samples of grapefruit peel jam with crystal sugar and 32.3 6 mg/100 g in the samples of grapefruit peel jam with xylitol, certifying that the products obtained have special nutritional qualities.

Samples of grapefruit peels jam with sugar and xylitol meet the quality and safety requirements, have special nutritional properties, at the same time contributing to the reduction of food waste, by capitalizing on the waste resulting (peels) from fruit processing.

Keywords: Grapefruits, waste, nutritional, jam



Section: Food Control

P19

Obtaining and characterization of gluten-free cake – with rice and oranges

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Foods with low gluten content are more and more widespread throughout the world. They bring a lot of benefits to the body, such as: increasing energy, reducing inflammation, helping to lose extra pounds, keeping the digestive tract healthier or improving bone health. Rice (*Oryza sativa* L.), the main staple food for half of the global population, contains starch as its main ingredient.

In the first part of the project, a literature study was carried out regarding the importance of rice used in obtaining bakery products, the physical-chemical properties and the associated benefits;

In Chapter II, the manufacturing recipes with crystal sugar and stevia sweetener were established, the technological scheme was drawn up and the main technological steps for obtaining the rice cake were described.

The nutritional properties of the gluten-free cake, with rice and oranges, were determined within the *Interdisciplinary Research Platform of University of Life Sciences "King Mihai I" from Timisoara*.

Following the sensory evaluation, for the General Acceptability criterion, the average score obtained was 4.90 points (the cake with stevia sweetener), compared to 4.80 points obtained by the rice cake and crystal sugar. The moisture content varies between 22.5-23.4%, due to the high content of milk used in the recipe but also the main ingredient in the composition, rice, which is able to absorb a greater amount of water. The ash content recorded in the studied samples was between 0.9-1.2% and the lipid content was between 16.5%-17%.



The rice cake samples registered a polyphenol level between 89.32 mg GAE/100g and 97.27 mgGAE/100 g, due to the addition of oranges which are known for their high polyphenol content.

Following the research carried out, it can be highlighted that the cake with rice, oranges and stevia sweetener is beneficial for the body due to its high content in polyphenols and does not contain gluten, which can be consumed by people suffering from eating disorders (celiac disease).

Keywords: gluten-free cake, rice, oranges



P20

Studies on the nutritional characteristics of raspberry sorbet

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Raspberries are one of the most delicious berries with a lot of health benefits for the human body. The complex of antioxidant substances in the composition of the fruit actively fights against aging, minimizes the harmful effects of free radicals and also significantly reduces the risk of malignant and benign neoplasms. Fruits full of vitamins can be used both for fresh consumption and in the preparation of sherbet, jams, jellies, etc.

In the first part of this project, the literature study was carried out regarding the properties of the fruits used in obtaining sherbet. In Chapter II, the product manufacturing recipe and the technological scheme was established and the stages of the raspberry sherbet production process were detailed.

In Chapter III, the results obtained from the physical-chemical analyzes were presented, as well as the impact on consumers by rendering the results obtained from the sensory analysis using the 5-point hedonic scale.

The average scores obtained, for the *Overall Acceptability* criterion, was 4.85 points, for the sherbet with mint, and the average obtained for the sherbet without added mint was 4.54 points, the taste of mint being liked by the evaluators.

The samples of raspberry sorbet with added mint recorded an mineral substances content of 0.66% and the sample of raspberry sorbet without added mint of 0.32%. The vitamin C content recorded in the sorbet samples studied was between 7.7 mg/100 g (raspberry sorbet without added mint) and 8.1 mg/100 g (samples with added mint), and the level of polyphenols was higher in mint samples (160.77 mg GAE/100 g) compared to non-mint sherbet samples (151.32 mgGAE/100 g).



Raspberry sherbet samples, with and without mint, correspond to the quality requirements established by the legislation in force, have special nutritional characteristics and obtained high scores from the consumers who participated in the sensory evaluation, the impact being a positive one.

Keywords: nutritional, raspberry, sorbet



P21

Design and evaluation of aperitif and flavored cake top assortments

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In this work, two types of cake top assortments were made and analyzed, namely: aperitif and flavored.

When obtaining the aperitif top, the following were added to the manufacturing recipe, in addition to the specific ingredients of a cake top: yellow, green, red peppers, mushrooms and garlic. The nutritional value of these vegetables can be due to their chemical and complex composition, but especially due to their content in mineral salts, vitamins, and aromatic substances. In order to season this type of top, the following spices were used: pepper, basil and marjoram, with beneficial effects for the human body.

When preparing the sweet cake top, it was flavored with the following components: mint, lime and raspberry. These gave it flavor, a pleasant, sweet-sour taste and aroma.

Thanks to the ingredients used in seasoning and flavoring, two varieties of cake top with food and energy value resulted, which were later analyzed physico-chemically, sensorially and microbiologically.

Keywords: aperitif cake top, flavored, peppers, mushrooms, spices



P22

The influence of the addition of some essential oils on the microbial load in the milk intended for the production of yogurt

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The purpose of the present work is to obtain yogurts with the addition of essential oils in order to study the extent to which the addition of these oils can influence the microbial load in the raw material milk used to make these types of yogurts.

Yogurt is an acidic dairy product that contains all the nutritional elements of milk in a more easily assimilable form, and milk is one of the most accessible sources of protein of animal origin.

Essential oils are complex mixtures of volatile compounds, resulting from secondary plant metabolism, present in abundance in aromatic plants. These volatile molecules include monoterpenes and contain aromatic compounds, phenyl-propane derivatives. Due to their chemical composition, essential oils have numerous biological activities (antioxidant, anti-inflammatory, antimicrobial, influencing physiological functions, etc.) of great interest in the field of health and in the food industry. Oils with such beneficial properties are also those added during the preparation of yogurts, namely the essential oils of: mint, lavender, lemon and orange.

Keywords: yogurt, essential oils, mint, lavender, lemon, orange, microbial load



P23

Nutritional utilization of *Sambucus nigra* flowers

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The *Sambucus nigra* (elder, elderberry shrub) is a shrub about 4-5 meters high, in the form of a bush yellowish-white or even white flowers, arranged in inflorescences. It blooms in June and July, the fruits are black or red in color.

Infusion of elderberry flowers is anti-inflammatory, diuretic, antiseptic, galactagogue, sweats. Elderberryflowers have diaphoretic, laxative, diuretic, galactagogue, febrifuge, slightly disinfectant and anti-inflammatory properties, and are indicated in obesity and menopause [1-4]. The most common advantages are that herbal remedies are not habit-forming, have no harmful side effects, do not cause adverse reactions and are cheaper [2].

The purpose of this study is to highlight the positive role that the food product has in the diet, due to its nutritional and phytotherapeutic features. We prepared socata (elderberry juice) and syrup. As "socata" is prepared by fermentation, it is good to know that "socata" for children must not be alcoholic. So we also prepared elderflower syrup.

“Socata” (elderberry flower juice) is a soft drink traditional Romanian made by fermenting elderflowers (*Sambucus nigra*), where sugar, lemon and water were used. Socata, depending on the flowering period of the elderberry, is produced and drunk during the months May-June, from fresh flowers, but it can also be made in other periods if dried elderflowers are used. For our products, we used different additions (ginger, lemon, anise).

Plant syrups are extracts of plant nature (natural juices obtained by squeezing, infusions, decoctions, macerations) to which sugar is added in large quantities. The sugar in the syrup has the role of correcting the taste and especially of



preserving the product, because microorganisms cannot survive at a high concentration of sugars [5].

Food syrups are natural, synthetic or mixed solutions of liquid-viscous consistency, very sweet, which are used in the preparation of syrupy deserts, chocolate, candies, artificial honey, liqueurs or soft drinks [5,6].

Keywords: elderberry, soft drink, syrups, “socata”

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P24

Research on the physico-chemical and sensory properties of Camembert cheese

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Camembert is a soft cheese, matured on the surface of mold (Spinnler and Gripon, 2004; Codex Standard, 2010). It is classified as "soft cheese", which is generally unpressed, contains high humidity [1,2]. Currently, there is no definition for Camembert cheese in the Romanian Food Safety Law. The microflora associated with camembert cheese production is extremely diverse, especially when using raw milk, which can be conveniently divided into two groups: (1) lactic acid bacteria and (2) secondary microflora [3,4].

The main objective of the research carried out in this study was to obtain an assortment of Camembert cheese using whole cow's milk as raw material. At the same time, in order to optimize the technological process and increase the production yield, emphasis was placed on the effects of the types of production starter cultures on the quality of our product as well as the doses of each type of ferment. For this purpose, the physico-chemical and sensory characteristics of Camembert cheese samples obtained with various types of starter cultures (Flora Danica, Thermophile, *Geotrichum candidum*, *Penicillium Candidum*). The Camembert type cheese was made in the Laboratory of Technologies in the Dairy Industry of the Faculty of Food Engineering from USV Timișoara, using lactic cultures and industrially produced secondary flora (Flora Danica, Thermophile, *Geotrichum Candidum*, *Penicillium Candidum*), added in the following percentages: 0.6%; 0.4%; 3%; 5%. To assess the quality of the raw material and the experimentally obtained cheese variants were determined pH, titratable acidity, fat content, total dry matter, protein, respectively salt content. The organoleptic characteristics of the cheese samples were analyzed according to the instructions provided by the quality standard for cheeses. All samples were brought to the temperature of 15-20 before examination 0C. For



the performance of the sensory analyses, the following order was observed: external and internal appearance, color, consistency, smell and taste. The average total solids content was 58.45% ranging between 51.8% and 67.35%. The average fat content of the cheese samples was 22.74%, going from 19.00% to 26.75%. The average fat content related to dry matter was 38.85%. Camembert cheese samples had an average protein content of 17.87%, varying from 11.70% to 22.07%. The average acidity of the samples was 0.95%, varying from 0.55 to 1.29%. The quality standards for Camembert cheese indicate a maximum value for titratable acidity of a maximum of 3% as lactic acid [5]. The acidity values of all Camembert cheese samples did not exceed 3%. The pH value of Camembert cheese samples varied from 5.33 to 5.48. The average pH value was 4.70. The addition of mesophilic lactic cultures to the manufacture of Camembert cheese had a beneficial effect on the physicochemical and sensory characteristics of the finished product. The different proportions of added lactic cultures significantly contributed to the sensory attributes of Camembert cheese, also influencing the native microbiota in the finished product compared to control samples. All Camembert cheese samples showed good overall acceptability, but the tastes of the tasters went towards the samples obtained with the addition of mesophilic culture and *Penicillium Candidum*.

Keywords: Camembert cheese, starter cultures, sensorial analysis, protein content, fat content

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P25

Studies on the identification, control and monitoring of critical control points in the process of production of yogurt from goat's milk with 2.8% fat,

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Goat milk yogurt is an excellent dairy product due to its high nutritional value and providing a number of health benefits to the consumer. The chemical composition of yogurt can vary depending on the bacterial strains present in the starter culture used in fermentation, the type of milk used (whole, normalized or skimmed milk), the species from which the milk is obtained (cattle, goat, sheep), the type of milk, the presence of sweeteners and fruit added before fermentation, as well as the duration of the fermentation process. However, the general composition of yogurt is more or less similar to that of milk. Therefore, yogurt is a rich source of proteins, carbohydrates, minerals such as calcium and phosphorus and vitamins such as riboflavin (B2), thiamine (B1), cobalamin (B12), folic acid (B9), niacin (B3) and vitamin A [1-4]. Since yogurt is widely consumed, it is important to establish an effective food safety system such as HACCP during its production to improve quality and ensure consumer safety and protection [5].

This study was conducted to evaluate Hazard Analysis and Critical Control Points (HACCP) implemented in the processing line of yogurt obtained from goat's milk with 2.8% milk fat. For this purpose, the HACCP plan was established, the critical control points (CCP) were identified based on the flow chart of the goat milk yogurt production line. Also, the present study was designed to evaluate the chemical composition and microbiological quality of fresh goat milk and the organoleptic properties of yogurt produced from this milk. The research was carried out on the production line of goat's milk yogurt from a company located in the vicinity of the city of Timișoara specialized in obtaining dairy products using sheep and goat milk as raw material. The results of our study showed that the use of good quality raw material and the



implementation of a control system was very important during the production of goat milk yogurt. It was found that the HACCP system is necessary to improve the safety and quality of the prepared yogurt. The HACCP system was able to identify and evaluate the various sources of hazards during the different stages of yogurt manufacturing and control the critical control points that arise through the application of this system. All the results recorded during the monitoring stage of the physical, chemical and microbiological parameters for the raw material and the finished product did not deviate from the standard values (pH of raw milk 6.6; titratable acidity 0.151%; fat 3.9%; density 1.030 g/cm³ and NTG 4.72 log₁₀cfu/ml. After the pasteurization of the milk, its density increased slightly to 1.039 g/cm³, while the total dry substance, respectively the non-fat, remained relatively unchanged, namely SNF 12.11% and TS 15.16%. During the fermentation stage of the inoculated milk, values of pH 4.6, viscosity 30.2 mPas were recorded and the incubation temperature was 43°C. The finished goat's milk yogurt had a pH of 4.43, the viscosity varied between 53.17 and 59.68 mPas, yeasts and molds were absent and the storage temperature did not exceed 8.14°C. A suggestion for future research on the production of yogurt from goat's milk would be to raise awareness and understanding of the HACCP system as a food safety program that leads to increased consumer confidence and commercial competitiveness.

Keywords: goat milk, yogurt, HACCP, critical control points

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P26

Dalia Cheese manufacturing technology

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Abstract. The objective of this work was to analyze 5 samples of cheese with semitar paste, from the point of view of water content, dry matter content, fat content related to dry matter, and the salt content was also determined. Dairy products are found on the fourth step of the food pyramid, they are necessary for a healthy and varied diet and the consumption of cheese is mainly used due to the high calcium content. In addition to the rich content of calcium, this type of cheese also contains magnesium, important for the health of the body and mind, being a real source of animal protein. Due to its high nutritional values, as well as its organoleptic characteristics, cheese is highly appreciated by consumers, which is why the product is manufactured in much larger doses, carrying an essential weight in cheese production.

Keywords: cheese, Dalia Cheese, milk.

Introduction. The raw material for cheeses is cow's, sheep's, buffalo's and goat's milk, fully or partially skimmed. Dalia cheese is part of the group of famous Romanian cheeses that have been appreciated over time. This paper highlights the benefits that cheese brings to health, the most important being: prevention of osteoporosis, improvement of teeth health thanks to phosphorus, calcium, zinc and vitamins from the B complex. Fats in cheese are an important source of glucose, as they break down into this when they are metabolized, and glucose produces energy in the body. Probiotics found in cheese can help protect against harmful bacteria in the gut and improve colon health. [3,4]

Materials and methods. The cheese is obtained through a special technology that consists in the scalding operation in water, at a temperature of 72 to 80° C, of the curd that is matured, obtained by the operation of coagulation of the



milk, later it is processed into the desired shapes, considering the phases presented in the process of obtaining the cheeses (churn, ripening, packaging) until the end of the product with specific characteristics. The following determinations were made: sodium chloride, fat content using the acid-butyrometric method and humidity with a digital moisture balance (Thermobalance MLB 50-3).

Results and discussions. All 5 cheese samples analyzed were within the normal admissibility parameters, namely: the salt in the analyzed samples fell within the maximum allowed limit – 3% (between 2.3% and 2.7%); the amount of water in the analyzed samples fell within the maximum allowed limit of 47.5% (between 45.5% and 47.2%); with regard to the dry substance, the analyzed samples presented values between 54% and 52.7%, the minimum allowed limit being 52%; fat values relative to the U.S. of the cheese samples analyzed were between 46.6% and 49.2%, the minimum allowed value being 45%. [1,2]

Conclusions. Pe lângă conținutul bogat de calciu, acest tip de cașcaval conține și magneziu, important pentru sănătatea trupului și a minții, fiind și o adevărată sursă de proteină animală.

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P27

Determination of the physico-chemical characteristics of homemade smoked sausages with garlic, cumin, thyme and white wine

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Abstract. From time immemorial, the major problem of the population has been the provision of food. Concise intervention from industry and agriculture everywhere was useful in solving food problems. The meat processing sector is a significant part of the structure of the food industry and presents a set of features about the equipment used and the raw material.

The quality of the raw material is what gives us a healthy diet because it transmits to the finished product, calories and various substances, which guarantees a good development of the biological processes that take place in human nutrition. The present paper aimed to evaluate the quality characteristics of an assortment of homemade smoked sausages with added garlic, cumin, thyme and white wine, as well as its evaluation from a physico-chemical point of view.

In conclusion, we can appreciate that all the values obtained for the analyzed sausage samples fall within the standard values.

Keywords: sausage, wine, cumin, thyme, garlic.

Introduction. In order to have a healthy diet, the most important factor is the quality of the raw material, which transmits calories and various substances to the finished product, which ensure an efficient development of the existing biological processes in human nutrition. [4,5]. The present study describes the obtaining of homemade sausages improved with spices such as garlic, thyme and cumin, and at the end of the technological process a quantity of white wine was added.



At the same time, the study aimed to determine the physico-chemical characteristics, evaluate the quality of the obtained product as well as the benefits it has on human health [1,2].

Materials and methods. Meat consumption is a standard of living and from a trophic-biological point of view, meat is the only food with a plastic and energetic role. Garlic, cumin, thyme and wine were added to improve the quality of the finished product and to be called an innovative product.

Water content was determined, sodium chloride was determined by the Mohr method, determination of ash by calcination, fatty substances were determined by the Soxhlet method.

The experimental data obtained were compared with various recent results of food research.

Results and discussions. When analyzing the sausage samples from the point of view of sodium chloride, moisture, ash and fat content, the following main conclusions can be drawn: the percentage of salt in the analyzed samples recorded values between 1.93% and 2.69%; humidity values were between 38.07% and 41.66%; the gray values were between 1.21% and 2.15%; the fats in the analyzed sausage samples recorded values between 28.11% and 32.55%.

Conclusions. Meat products represent a main subject of interest for all of humanity, due to the intake of carbohydrates, through the use of animal fats, as well as the necessary protein and lipids, which is found in meat and its preparations. Therefore, nutritionists concluded that an average daily consumption of 25 g of animal fat and 150 g of meat and meat products is needed. With no sugar or carbs, they are a good choice for someone with diabetes or other health restrictions. Due to the fact that in the process of raising animals, feed containing chemical substances obtained through synthetic processes is not used, there is an increase in the consumption of meat preparations [3,6].

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Section: Consumer and environmental protection

P28

Determination of the physico-chemical characteristics of certain assortments of acidic dairy products: Sana

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Abstract. Acid dairy products are obtained from cow, goat, sheep and buffalo milk, the milk being skimmed or even whole, as well as from their mixture, through the use of combined or single bacterial cultures and a specific technological treatment for each individual product. These acidic dairy products are dietary foods that have healing properties. The nutritional and dietary value of acid dairy products is obtained from the fact that they have all the nutrients of milk, but in a form that is easier for the body to access. The probiotic bacteria found in Sana type I whipped milk are helpful bacteria that help digestion to be as easy as possible. Type I Sana whipped milk is better seen, as it supports the promotion of a healthy gastrointestinal tract. In this paper, we proposed to analyze some samples of Sana but also their physico-chemical characteristics, purchased from the local market.

Keywords: milk, dairy products, Sana

Introduction. Whipped milk is obtained by fermenting heat-treated cow's milk, seeded with selected cultures of flavoring and acidifying lactic streptococci (*Streptococcus diacetylactis*, *Streptococcus lactis*, *Leuconostoc citrovorum*, *Streptococcus cremoris*) [1,4]. Several types of product are made, of which the most consumed in our country is "Sana", a product with a higher fat content. According to the amount of fat, whipped milk is classified into four types: extra type with a 4% fat content; type I, breast with a 3.4% fat content; fat type II with a 2% fat content; dietary type III with a fat content of 0.1%.



Type I Sana whipped milk is obtained from partially or fully skimmed cow's milk where lactic acid bacteria are cultivated [3,5].

Materials and methods. Technologically, SANA is made from normalized or skimmed cow's milk with a fat content (3.4%). The protein titer, the acidity by the Thörner method and the fat content by the acid-butyrometric method were determined.

Results and discussions. In order to identify the organoleptic characteristics and the important physico-chemical indicators of sana, 3 varieties of sana (produced by different companies) were tested. From each assortment, 2 samples were tested, one week apart. After carrying out the determinations, we can draw the following conclusions: - after the sensory examination, no deviations from the legally imposed norms for the acid lactic product were found: healthy; - the acidity of the analyzed whipped milk samples recorded values between 88°T and 108°T, being below the maximum limits allowed for this parameter of 120°T; - the protein titer of the analyzed health samples was above the minimum limits allowed for this parameter of 3.2%, the values falling between 3.3% and 4.0%; - regarding the fat content of the analyzed breast samples, except for one, all samples exceeded the minimum admissibility limit of 3.6%, the maximum value being determined in sample 2a (3.8%) [2,4,5].

Conclusions. Sana asigură corpului vitaminele și nutrienții de care are nevoie: tiamină, niacină, riboflavină, acid folic, vitaminele B6 și B12. Acestea sunt de folos pentru absorbția mineralelor în organism, mai ales a calciului, care este esențial pentru sistemul osos. De asemenea, ajută la scăderea nivelului de colesterol rău din sânge, reglează flora intestinală și previn apariția afecțiunilor de tip gastrointestinal. Un alt motiv important pentru consuma Sana este pentru că are efect detoxifiant asupra organismului și acest lucru se observă la exterior: pielea începe să fie din nou strălucitoare, netedă și suplă.

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P29

Lemon and ginger fig jam

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Abstract. Sweets are considered a product quite consumed and appreciated in the food field. Figs are high in fiber, help maintain digestive and heart health, are a potential help in maintaining blood sugar levels, and are also a good remedy for digestive problems such as constipation. Figs help to improve blood pressure and regulate blood fat levels, which helps to improve vascular health and The aim of this work was to obtain an original product - the sweetness of figs with lemon and ginger aroma as well as to make its analysis from a sensory point of view. The three varieties of jam are characterized by special organoleptic properties, due to the raw and auxiliary materials used in their composition.

Keywords: figs, jam, lemon, ginger.

Introduction. The literature study synthesized data and information regarding different types of sweetness, as well as their usefulness on the human body, due to its beneficial properties. The vitamins and chemical compounds in the composition of figs contribute to the daily intake required by the human body, but at the same time they help the proper functioning of the metabolism [2].

Materials and methods. To obtain fig jam, the following raw and auxiliary materials were used: figs (own source), lemons (own source), ginger (purchased from the supermarket), white sugar (purchased from the supermarket), and spring water. The preservation method was done with the help of sugar. Saccharo-osmo-anabiosis is the biological principle that is found at the base of that preservation process and is carried out by adding the optimal amount of sugar to increase the osmotic tension of food products in the liquid phase to destroy the multiplication of microorganisms (over 60% sugar).



Results and discussions. The own contributions to the present work indicated the following aspects of the three types of sweetness analyzed: three different varieties of sweetness were obtained and evaluated from a sensory point of view: assortment 1: fig jam; assortment 2: lemon-flavored fig jam; assortment 3: lemon and ginger fig jam. Following the evaluation of the sensory properties, it was observed that the variant of fig jam with lemon and ginger weapon was the most appreciated in terms of sensory characteristics: taste, color, smell [1,3].

Conclusions. The jam is a product that everyone likes, it being natural, easy to prepare, with fresh ingredients and without harmful additives. All types of jam contain a significant amount of vitamin C, being a good remedy in the fight against colds, strengthening the immune system. Most of the fruits from which the jam is obtained contain large amounts of beta-carotene, vitamin C, vitamins B1, B2, E and PP, a very good source that is preserved almost 100% after the boiling process [4,5].

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P30

Study of some oils as sources of unsaturated fatty acids

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The aim of this work was to inventory some sources of unsaturated fatty acids, with benefits for a healthy life. Nowadays, terms such as healthy diet or balanced diet have increasingly entered the consumer's consciousness. According to these concepts, food is not only necessary for the development, growth and maintenance of health, but it also plays a key role in the quality of life. Health is not only the absence of disease, but also physical, mental and psychological well-being.

It is known that dietary improvements have the potential to reduce the prevalence of CVD [1]. Also, was established that saturated fatty acids (SFA) increase low-density lipoprotein (LDL) cholesterol, which represent a strong risk factor for CVD [2].

The most important group of fatty acids for humans are essential fatty acids (EFAs), which cannot be synthesized and must be supplied with food [3].

From a very large number of oils, present on the market, 7 varieties were selected as follows: olive oil, linseed oil, grape seed oil, hemp seed oil, walnut oil, castor oil and sesame.

The caloric content, per 100 ml of oil, varied between 812 kcal, for hemp oil, and 900 kcal for walnut oil. The smallest lipid content was noticed for the olive oil (91,6g/100 ml), and the highest levels (96 g) for walnut and sesame oils. The saturated fatty acids varied between 8.97% for linseed oil and 14.2% for sesame oil. The highest content in polyunsaturated fatty acids was noticed for the hemp seed oil (69%), followed by the linseed oil (67.84%). In this case, the sesam oil had the lowest content, respectively 41.7%.



It would be very important for each of us to know the essential fatty acid content in these oils and use them in our diet.

Key words: health, essential fatty acids, diet

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P31

Study of some possibilities for bread quality improving

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Since, nowadays, people are increasingly looking for alternative nutritional sources and show an obvious tendency towards natural foods and without additives, the aim of this work was to identify some possibilities for improving the quality of bread.

In the countries of the European Union and beyond, a tendency of the population towards the consumption of bakery products with improved quality properties compared to classic white bread.

Food fortification consists of incorporating food resources rich in protein or micronutrients (minerals, vitamins, etc.) into a staple, widely consumed and accessible food, such as bread, to create its nutritional balance. Various options for improving the quality of bread have been identified, these have been carefully studied by a number of researchers, as follows: the use of Macroalgae biomass (Menezes and col. 2015); the enrichment with oilseeds (flaxseed, chia, sunflower, pumpkin, sesame and poppyseed) (de Lamo and Gomez, 2018); the enrichment with Hazelnuts and Walnuts (Pycia and Ivanišová, 2020); the enrichment of wheat bread using various plant (melon, bean and soya) proteins (Odunayo and all.,2017); enrichment with calcium by using eggshell powder (Bradauskiene, 2017), etc.

Key words: bakery, health, plants, nourishing

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P32

Sensory and physical-chemical evaluation of gluten-free bread obtained from rice flour and chestnut flour

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The main objective of this study was to develop a new product on the market and exploit the nutritional potential of chestnut flour in the technology of obtaining gluten-free bread based on rice flour and chestnut flour, formulation intended for people with gluten intolerance and people who want to adopt a healthy lifestyle. Celiac disease (gluten enteropathy) is a long-term autoimmune condition caused by a reaction to gluten, a different group of proteins found in wheat and other grains such as barley and rye, the only known effective treatment being a strict lifelong gluten-free diet. Due to today's unhealthy diet, the number of people who develop gluten intolerance is constantly increasing, which is why, following the theoretical and practical studies carried out, we have obtained a range of gluten-free bread formulation based on chestnut flour and rice flour. Three bread samples from rice flour and chestnut flour were prepared, added in different proportions (P1 - 75:25%, P2- 50:50%, P3 - 25:75%), mixed with other ingredients and compared with control sample (PM - 100:0:0% based on rice flour). After baking, the gluten-free bread samples evaluated showed changes in appearance with increasing percentages of added chestnut flour, thus the highest score was attributed to sample P2 (3.5 points) and the lowest to sample P3 (2.5 points). According to the bread quality evaluation scheme, the best taste was given to sample P2 (4 points), while sample P3 obtained the lowest score (3 points). In conclusion, after comparing the data obtained, the gluten-free bread sample with 50% rice flour and 50% chestnut flour added was the most appreciated by the evaluators, with a score of 17.6. Regarding the physical-chemical analysis, the highest percentage of moisture was recorded in the control sample - 40.65% and the lowest was recorded in the P3 - 38.66%. Sample P3 recorded the highest



content in fat – 5.02%, protein – 8.95% and mineral content – 3.65%, among all of the gluten-free bread samples evaluated, which leads to the conclusion that the addition of chestnut flour increases the nutritional value of the bread samples obtained and thus benefits consumers. After summarizing the results obtained in this study, the positive influence of the addition of chestnut flour in the obtained bread samples can be observed. Thus, by adding chestnut flour, the quality of the product is improved by increasing its nutritional value.

Keywords: gluten-free bread, chestnut flour, rice flour, sensory evaluation



P33

Sensory and physical-chemical evaluation of gluten-free biscuits obtained from coconut flour and rice flour, enriched with cranberry powder

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The main objective of this study was to develop a new product on the market and exploit the nutritional potential of chestnut flour in the technology of obtaining gluten-free bread based on rice flour and chestnut flour, formulation intended for people with gluten intolerance and people who want to adopt a healthy lifestyle. Celiac disease (gluten enteropathy) is a long-term autoimmune condition caused by a reaction to gluten, a different group of proteins found in wheat and other grains such as barley and rye, the only known effective treatment being a strict lifelong gluten-free diet. Due to today's unhealthy diet, the number of people who develop gluten intolerance is constantly increasing, which is why, following the theoretical and practical studies carried out, we have obtained a range of gluten-free bread formulation based on chestnut flour and rice flour. Three bread samples from rice flour and chestnut flour were prepared, added in different proportions (P1 - 75:25%, P2- 50:50%, P3 - 25:75%), mixed with other ingredients and compared with control sample (PM - 100:0:0% based on rice flour). After baking, the gluten-free bread samples evaluated showed changes in appearance with increasing percentages of added chestnut flour, thus the highest score was attributed to sample P2 (3.5 points) and the lowest to sample P3 (2.5 points). According to the bread quality evaluation scheme, the best taste was given to sample P2 (4 points), while sample P3 obtained the lowest score (3 points). In conclusion, after comparing the data obtained, the gluten-free bread sample with 50% rice flour and 50% chestnut flour added was the most appreciated by the evaluators, with a score of 17.6.



Regarding the physical-chemical analysis, the highest percentage of moisture was recorded in the control sample - 40.65% and the lowest was recorded in the P3 - 38.66%. Sample P3 recorded the highest content in fat – 5.02%, protein – 8.95% and mineral content – 3.65%, among all of the gluten-free bread samples evaluated, which leads to the conclusion that the addition of chestnut flour increases the nutritional value of the bread samples obtained and thus benefits consumers. After summarizing the results obtained in this study, the positive influence of the addition of chestnut flour in the obtained bread samples can be observed. Thus, by adding chestnut flour, the quality of the product is improved by increasing its nutritional value.

Keywords: gluten-free bread, chestnut flour, rice flour, sensory evaluation



P34

Quality and sensory analysis of some Romanian blonde and dark beer products

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Beer is one of the most consumed drink in Europe and in Romania as well. They are marketed as blonde or dark beer products, the first type being most consumed. However, the raw ingredients and the technological particularities significantly influence the quality and acceptability of the beer products. In this study, the quality of the beer types that are the most marketed/consumed in Romania has been evaluated through the acidity/pH and °Brix values, as well as the sensory analysis. Six types of beer products were considered in this study (i.e., classic blonde beer, classic dark beer, cranberry flavored beer, grapefruit favored beer, lemon flavored beer, lime and mint flavored beer). The pH values were in the range of 4.54-4.58, while the dissolved sugar content had values in the range of 4.73-6.80 °Brix, higher for the classical dark beer samples. The appearance, color, flavor, taste, and foaming have been considered as the main sensory characteristics. The importance of the sensory variables was assessed by principal component analysis (PCA). High similarity was observed for citrus (lemon, lime and mint) flavored beer samples and classic blonde beer samples, while the classic dark and grapefruit flavored beer samples were dissimilar and less appreciated. The flavor and color were the most important sensory variables for this classification, followed by the foaming.

Keywords: quality, sensory analysis, blonde, dark beer, products



P35

Sensory analysis and halogen drying of some cereal flakes marketed in Romania

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This study aimed to identify the main sensory parameters of some cereal flakes marketed in Romania in relation with their moisture content that influence the consumer acceptability. Three types of cereal flakes (e.g., wheat, rye and oat) were evaluated in duplicates for their moisture content and sensory characteristics. The moisture content was in the range of $4.0 \pm 0.05\%$ for the wheat flakes and 9.0 to 10.6% for the rye and oat flakes, as was determined by halogen drying method (Partner WPS 210S thermobalance, Radwag Intelligent Weighing Technology, Inc.). Sensory analysis was performed by a consumer panel, taking into account the appearance, color, smell and taste as the sensory parameters. Based on a scoring scale from 5 to 1 (from highest to lowest acceptability), wheat flakes were very well accepted (average score of 4.45), with the appearance and color as the main parameters. These are in good agreement with the moisture content, which was the lowest in wheat flakes. The other two types of flakes had similar acceptability, with an average sensory score of ~ 3.2 and highest moisture content. As a conclusion, wheat flakes marketed in Romania had better consumer acceptance, especially due to appearance and less to the overall flavor or physical chemical characteristic.

Keywords: Sensory analysis, halogen drying, cereal flakes



P36

Salami type innovative vegan meat substitute product - obtaining and evaluating the protective quality

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In recent years, it was registered a growing demands on market for vegan products to replace meat, both as a result of the increase in the number of people who choose a vegan lifestyle, but also of those who want healthier alternatives to traditional meat food products. A first purpose of this work was to obtain an innovative vegan product from cashew nuts to replace meat salami and to have high sensory and nutritional characteristics. Two versions of the product were made: one with the addition of red beet juice for a color close to that of the meat (CS1) and the second, without this addition (CS2). The second goal of the work was to analyze the two finished products in terms of total polyphenols content, antioxidant activity, proximate composition, energy value as well as organoleptic characteristics (hedonic scoring method from 1 to 5). Due to the over 2 times higher content of total polyphenols in beetroot juice ($7,12 \pm 0,12$ mg gallic acid/g) than in cashew nuts ($3,31 \pm 0,08$ mg gallic acid/g), a higher concentration of these compounds was recorded in CS1 vegan salami ($2,98 \pm 0,04$ mg gallic acid/g) than in CS2. Regarding the antioxidant activity, beetroot juice showed the best DPPH free radical scavenging activity ($93,68 \pm 0,49$ %) and also the vegan salami obtained with the addition of beetroot juice (CS1) ($88,71 \pm 0,39$ %). Regarding the composition of the two varieties of cashew salami, both had a water content of 70% - which is the limit provided by STAS for meat products in the fresh category, both having very close values also regarding the content of proteins, carbohydrates, lipids, sodium.



The energy value of the cashew vegan salami variant with added beetroot juice was slightly higher (148 kcal/100g) than that of the CS2 variant (142 kcal/g).

From organoleptic point of view, both varieties of vegan salami were well appreciated by the tasters, obtaining scores above 4 in all sensory characteristics analyzed

Keywords: vegan salami, polyphenols, antioxidant activity, cashew nuts



P37

Monitoring the technological process of manufacture of rye bread, evaluating its quality indicators

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Fruit juice is a drink obtained by extracting or pressing fruits. Although it is a source of free sugars, it also contains micronutrients and bioactive substances from fruits. [1] According to CODEX STAN 247-2005, the fruit nozzle is the unfermented but fermentable liquid obtained from the edible part of the fruit, mature and fresh fruit or from fruits stored in good condition by appropriate means. Surface treatments should be applied in accordance with the provisions of the Codex Alimentarius. [2] The appearance of fruit juices is very different. Citrus and pineapple juices usually have a high content of insoluble pulposus solids and are almost always sold as cloudy juices. In contrast, cranberry juices, grapes, apples have very few or no solid suspensions and are very clear. In some juices, such as citrus, many of the flavoring components adhere to the pulp, and the clarified juices have no flavor. Preserving the natural content of pectin by rapidly heating and cooling the juice as soon as possible after pressing is necessary to inactivate natural enzymes. [3] The technological process of obtaining natural fruit juices includes the following operations: reception of ripe fruit, washing of fruits and elimination of impurities, crushing of fruits, extraction of fruit juice, inactivation of enzymes, clarification, concentration, bottling and storage. The purpose of this work was to evaluate some quality indicators of some natural fruit juices purchased from the supermarkets in Timisoara. The analyses carried out aimed at evaluating the following quality indicators: total nitrogen (%), carbohydrates (%), ash (%), dry matter (%) and sugar.



The values obtained were compared with the reference values of the Specialized Standards and with the values presented by the manufacturers. For all six samples of fruit juices evaluated, the results obtained were within the limits provided by the legislation in force.

Keywords: fruit juice, technological process, quality indicators

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P38

Comparisons regarding the load with trace elements of some dehydrated vegetables taken from the western part of Romania

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Several studies have indicated that a higher intake of vegetables is associated with a reduction in cardiovascular disease (CVD) and possibly a reduction in obesity, type 2 diabetes, chronic respiratory diseases and some types of cancer [1]. The food requirement has been changed over the past decade, and there is a growing demand for instant food. The current food technology as well as the minimum cooking period of dehydrated vegetables has favored their consumption more and more often [2]. One of the oldest methods of preserving vegetables is to dehydrate them. By eliminating water, the weight of vegetables is reduced, microbial action, therefore the shelf life is longer. Dry foods and vegetables have more calories due to their nutrient concentration. Nutritional value, aroma and appearance are best protected from low temperature and humidity throughout storage [3]. Drying methodologies include osmotic, convective, fluidized bed, ohmic, microwave, vacuum and freeze-drying techniques [1, 4]. Before the actual drying phase, there is a pre-processing stage for the removal of foreign materials and for the selection, washing, occasional cleaning and reduction of the size of the vegetables [1, 4]. The objective of this country was to evaluate the content of trace elements (Cu, Mn, Fe, Cd, Pb, Zn, Co) in six samples of vegetables as follows: Peppers (*Capsicum annuum*), Tomatoes (*Solanum lycopersicum*), Potatoes (*Solanum tuberosum*), Onions (*Allium cepa*), Carrots (*Daucus carota*) and Eggplants (*Solanum melongena*) harvested from the western part of Romania.



Dehydration of the vegetables was carried out by means of the classic method at the oven, after a preliminary cleaning of them. The resulting dry matter was calcined at a temperature of 650 °C for six hours. After calcination, the resulting ash was mineralized with sulfuric acid and nitric acid. The residue obtained from wet mineralization was transposed into volumetric flasks and brought to the mark. The solutions obtained were analyzed through the equipment type: Atomic Absorption Spectrometer – Varian 280 FS SpectrAA. The content of vegetables in trace elements complied with the following order: Fe>Cu>Mn>Zn>Co. Regarding the load with the elements Pb and Cd, values located within the detective limit of the device were not recorded.

Keywords: vegetables, dehydration, atomic absorption, trace elements

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P39

Comparisons regarding the quality indicators of some types of honey taken from the western part of Romania

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Honey is a concentrated solution of sugars, having two main components, glucose and fructose, as well as other components such as: organic acids, enzymes, vitamins, acetylcholine, flavonoids, mineral elements [1]. Honey extracted from honeycombs consists of pollen and beeswax, for a better quality as well as a better shelf life they must be removed.

Therefore, honey is processed before being packaged in bottles or other containers. The quality of honey depends on the quality of the equipment used and the operations in the technological process [2]. The technological process of obtaining honey includes the following operations: unloading honeycombs, extraction of honey itself by centrifugation, straining honey in order to eliminate major impurities, filtering honey to eliminate fine impurities, heating to reduce water content and the number of yeasts, cooling and bottling [2, 3]. The purpose of this work was to qualitatively evaluate several types of honey, polyflora, acacia and manna from beekeepers from Caras-Severin County. Samples of honey were subjected to physico-chemical analysis of quality indicators as follows: acidity expressed in ml NaOH soil.1N/100 g, umidity %, diastatic index expressed in cm³/g HMF expressed in mg/100 g, inverted sugar % and sucrose %. The results obtained were compared with the limits stipulated in the standard: in the case of acidity all the honey samples showed values well below the maximum of 5 ml NaOH soil.1N/100g provided by the Standard, in terms of humidity the values obtained were very close to the



Standard value - maximum 20%, the analyses carried out in the case of the diastatic index showed values well above 8 cm³/g the minimum value provided by the Standard, the invert sugar content of the honey samples was well above the 65% value stipulated by the Standard, and in the case of sucrose the values obtained were very close to two samples to the limit provided by the Standard - maximum 5%.

Keywords: honey, technological process, physico-chemical indicators

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P40

Comparisons regarding the evaluation of the quality indicators of some mineral waters sold in the supermarkets in Timisoara

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Mineral water is a drinking water that comes from a natural source (spring), or artificially formed (well) and which by its physical structure and chemical composition, usually complex, can exert therapeutic effects. It has a constant chemical composition, relative to annual fluctuations [1]. Mineral waters marketed in Europe are of four types: natural mineral water, spring water, table water and curative/medical water. Natural mineral waters account for the largest share of European trade [2]. Water consumption, in particular the consumption of mineral water, plays a key role for human health, in addition it is used for therapeutic purposes in various forms and types [3, 4]. Mineral waters are considered to be food and must be stable, free of sediment or precipitation on the container not to affect the health of consumers, regardless of the amount consumed. Most of the mineral waters consumed contain CO₂ or can be artificially enriched with CO₂ [5]. Romania owns 60% of hydromine sources in Europe, one fifth of these resources is exploited (FRD Center Market, 2016) [6]. The technology for obtaining mineral water includes the following technological operations: mineral water abstraction, pipeline transport, tank storage, CO₂ impregnation tank transport, transport to the bottling plant, transport of bottled mineral water to the inscription and labelling machine, formation of boxes, pallet formation and storage. In this paper, six types of mineral water sold in supermarkets in Timisoara have been evaluated. In the case of these samples, the following quality indicators were analyzed:



dry residue, pH and conductivity. The results obtained were evaluated by multivariate analysis of the data.

The comparisons made in terms of own results and those submitted by the producer did not show any major exceedances in the case of the six samples of mineral waters. As regards the dry residue, the values obtained from the physico-chemical analysis have classified the mineral waters in the classes to which they belong.

Keywords: mineral water, technological process, quality indicators

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P41

Comparisons on the quality indicators of some red wines produced in the western part of Romania

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The process of turning grapes into wine is called winemaking [1]. Red wine is a complex matrix with a large number of chemicals. This drink is often considered one of the most important sources of polyphenol [2]. Most red grape varieties do not contain pigments in the pulp but rather in the skin, an important step in the process of obtaining red wine is the extraction of these compounds, as well as tannins and aromatic molecules respectively, from the shell in terms of wort during maceration. Keeping the skins and seeds in contact with the wort in the tank during fermentation is mandatory in order to promote the extraction and diffusion of these phenolic compounds in the wort. Keeping the skins and seeds in contact with the must also aims to obtain the final color of the wine due to the anthocyanins present in the shell, as well as the antioxidant capacity and structure offered by the tannins [3]. The stages of the technological process of obtaining red wine are as follows: quantitative and qualitative reception of red grapes, crushing and deciphering, fermentation and maceration on the bostina, obtaining ravac wine, finalizing alcoholic and malolactic fermentation, obtaining new wine, wine care, maturation, conditioning and bottling. The objective of this work was the evaluation of six types of red wine coming from the western part of Romania. The evaluated physico-chemical indicators were: alcoholic concentration (% volume), glucose and fructose (g/L), total acidity (g/l tartaric acid), volatile acidity (g/L acetic acid), total dry extract (g/L), total sugars (g/L) and free sulphur dioxide (mg/L). The results obtained were compared with the values prescribed in the



specialized standards and with the values presented by the manufacturers. All the values of the above mentioned indicators correspond to the norms and the label of the analyzed products.

Keywords: red wine, technological process, quality indicators

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P42

Monitoring the technological process of manufacturing some sausages, evaluating their quality indicators.

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Monitoring the technological process of manufacturing some sausages, evaluating their quality indicators. The objectives of this work were to monitor the technological flow of obtaining sausages from pork and beef, as well as to evaluate quality indicators: protein substances, total ash, fat, moisture and sodium chloride. The main operations in the technological flow of obtaining pork and beef sausages were: reception of the raw material pork and beef followed by weighing, chopping, mixing as well as adding spices, storage as well as maturation of the composition obtained at a temperature with a value in the range of 0-4 ° C , the next operation in the technological flow is the filling / formation of sausages to spritz followed by crushing, hot smoking, cooling and labeling, the technological flow ends with the storage and delivery of the finished product. Following the physico-chemical analyses carried out, the results obtained were the following: the analysis of the protein substances led to obtaining a value above the limit of at least 10g/100g of product provided by the Standard, in the case of total ash the value obtained was 2,51g/100g, the analysis carried out for the determination of fat recorded a value below the limit of maximum 30g/100g product, as provided for in the Standard, the water content determined was below the limit prescribed by the Standard, a maximum of 66 %, as regards the salt content, the value obtained was below the limit of a maximum of 2 % laid down by the Standard.

Keywords: Sausages, pork, beef, physico- chemical indicators



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P43

Comparisons regarding the evaluation of the quality indicators of some natural fruit juices sold in supermarkets in Timisoara

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Fruit juice is a drink obtained by extracting or pressing fruits. Although it is a source of free sugars, it also contains micronutrients and bioactive substances from fruits. [1] According to CODEX STAN 247-2005, the fruit nozzle is the unfermented but fermentable liquid obtained from the edible part of the fruit, mature and fresh fruit or from fruits stored in good condition by appropriate means. Surface treatments should be applied in accordance with the provisions of the Codex Alimentarius. [2] The appearance of fruit juices is very different. Citrus and pineapple juices usually have a high content of insoluble pulpous solids and are almost always sold as cloudy juices. In contrast, cranberry juices, grapes, apples have very few or no solid suspensions and are very clear. In some juices, such as citrus, many of the flavoring components adhere to the pulp, and the clarified juices have no flavor. Preserving the natural content of pectin by rapidly heating and cooling the juice as soon as possible after pressing is necessary to inactivate natural enzymes. [3] The technological process of obtaining natural fruit juices includes the following operations: reception of ripe fruit, washing of fruits and elimination of impurities, crushing of fruits, extraction of fruit juice, inactivation of enzymes, clarification, concentration, bottling and storage. The purpose of this work was to evaluate some quality indicators of some natural fruit juices purchased from the supermarkets in Timisoara.



The analyses carried out aimed at evaluating the following quality indicators: total nitrogen (%), carbohydrates (%), ash (%), dry matter (%) and sugar. The values obtained were compared with the reference values of the Specialized Standards and with the values presented by the manufacturers. For all six samples of fruit juices evaluated, the results obtained were within the limits provided by the legislation in force.

Keywords: fruit juice, technological process, quality indicators

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P44

Study on the obtaining and characterisation of a meat product processed by baking

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The main purpose of the work was to obtain a roll from beef in which plums were added to add value to the product. The product obtained was analyzed from an organoleptic, physico-chemical, and sensory point of view, and the nutritional value and the cost of production were calculated. The product obtained (beef rolls with plums) was compared with a similar product but without adding plums. From the organoleptic point of view, the following characteristics were analyzed: External appearance, form, appearance in section, gust and smell and consistency. The main physico-chemical properties traced in the roll samples were: water content %, fat %, sodium chloride %, protein %, ash %, and carbohydrates %. The results obtained led to the following conclusions:

- The organoleptic characteristics of the product made in the context of this dissertation work are in accordance with the characteristics established by the legislation in force;
- The moisture content (% max.) recorded for the beef roll sample with plums was 56.26%, within the maximum permissible limit of 65%, according to Order 210/2006, regarding the physico-chemical properties of sausage meat products.
- The protein content established by Order 210/2006 for meat products of roll type is at least 10%. The value calculated regarding the protein content of beef rolls with plums was 14.35%, above the minimum accepted value regulated by the legislation in force.



- The fat content established by Order 210/2006 is maximum of 40% for meat products of rolls type, the studied sample registering a content of 17.09%, thus the maximum limit established by Order 210/2006 on the conditions of admissibility of roll meat products, not being exceeded.
- The content of mineral substances in the analyzed sample was 2.03%. In this case, no maximum or minimum limit was legislated by the legislation.
- The NaCl content (%) of the studied sample was 1.78%, the maximum limit of 3% set by Order 210/2006 on the admissibility of the physico-chemical properties of fresh meat products, not being exceeded.
- The carbohydrate content of the studied roll sample was 8.49%, even in this case not legislating a maximum or minimum limit by the legislation in force.
- The energy value calculated based on the proximate composition for the beef roll sample with plums was 252.58 Kcal/100 g, and the calculated theoretical energy value was 274.44 kcal/100g. from the comparative analysis of the two values, it can be seen that no significant differences were recorded between the experimentally determined values and those calculated theoretically.
- The total polyphenols content was 168.25 mg GAE/100g for prunes and 55.24mg GAE/100g for beef rolls with plums, which indicates that adding plums leads to an increase in the functional value of the products to which they are added.
- After calculating the production cost of beef rolls with plums, a cost of 9.2 lei/100g of product was obtained.

Keywords: beef roll, plum, physical - chemical composition, organoleptic analysis, sensorial analysis



P45

Study on the production and characterization of canned pork and beef

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Canned meat is a food product made by packing spicy meat in durable and impermeable containers, sterilized at temperatures between 119 and 121 °C. The final sterilized product can be stored for several years, regardless of the storage temperature (0 - 25°C).

The main purpose of this work was to obtain two types of canned meat, pork and beef, without adding additives. The raw material used to obtain these two types of canned food represented high-quality meat. The obtained products were characterized as sensory and physical-chemically.

The sensory examination consisted in analyzing the appearance, taste and consistency and the Physico-chemical examination consisted in determining the content of water, ash, dry matter, NaCl, and fat and evaluating the degree of oxidation of animal fats.

The results obtained led to the following conclusions:

- From the point of view of the water content, the values were below the permissible limit of 70% and are in line with other studies that show a water content in beef meat between 60-76% and in pork between 51-73%;
- The protein content in the studied canned meat was higher than the minimum value set by Order 210/2006 of 10%. Thus, in the canned pork, the protein content was 13.24% and in the beef can was 24.21%;
- The recorded fat content in canned pork was higher than 26,24 % but below the maximum permissible limit of 27 % and 18,54 % in the case of canned beef, below the limit of 27 %;
- The NaCl content (%) of the samples studied were as follows: for canned pork samples, 1,36%, and beef canned – 1,25 %, the maximum limit of 3



% established by Order 210/2006 [16] on the conditions of admissibility of the Physico-chemical properties of meat products (canned meat), not being exceeded.

- The nitrite content in the samples studied was 3,21 mg/100 g for pork canned and 2,58 mg/100 g in beef preserves, below the maximum permissible limit of 7 mg/100 g;
- The ash content of the canned pork and beef studied, with values of 3.9% in the pork canned and 3.12% in the beef canned being determined;
- The carbohydrate content of the canned meat studied did not show any large differences between the two categories of samples, so in the pork canned, the carbohydrate content was 1,66 %, and in the beef canned, it was recorded at 1,07 %;
- Romanian legislation did not establish the energy value in the studied meat canned food (pork and beef). The values determined for the canned studies were: 370.96 Kcal/100 g for the pork canned food and 389.03 Kcal/100 g for the canned beef;
- The Kreiss reaction establishing the freshness of fats in foodstuffs of animal origin, following the determinations carried out for the canned pork and beef studied, had a negative reaction,
- As a result of the sensory analysis performed for the two samples of canned meat, the highest total and individual score for each characteristic were obtained in the case of the canned beef sample. In conclusion, from a sensory point of view, beef improves the characteristics of the product to which it is added.

As a result of the research carried out in the present work, the product obtained (canned pork and beef) can fall into the category of safe products for consumption, all the values obtained within the physico-chemical analyses being within the maximum or minimum limits allowed by the legislation in force.

Keywords: beef, pork, canned meat, physical-chemical composition, organoleptic analysis, sensorial analysis



P46

Study on the obtaining and characterization of hamburger meat paste

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The burger is a beloved dish of people worldwide and is the most popular food. Burgers occupy a leading place in the menu of global cuisine. Their success is because they can successfully adapt to any culinary culture and borrow from traditional ingredients.

Burgers consist of ground meat formed from round pasta. The classic burger is made from ground beef.

During the present work, a hamburger paste has been obtained, which has been characterized from an organoleptic and physico-chemical point of view, the results being compared with the maximum and minimum values regulated by Order No 210 of 30 August 2006 on the physico-chemical properties of meat products for the approval of the Rules on the marketing of meat products.

The physico-chemical analyses were performed at the Interdisciplinary Research Platform of the "King Michael I of Romania" University of Agricultural Sciences and Veterinary Medicine in Timisoara.

From the sensory point of view, the taste and the odour were evaluated as the external aspect, the form, the appearance, and the consistency. The analyzed robes were by the norms in force.

The main physico-chemical characteristics traced in the hamburger meat paste sample were: moisture content (%), fat (%), sodium chloride (%), protein (%), ash (%), carbohydrates (%), nitrites (mg/100 g), energy value (kcal/100 g) and Kreiss reaction.



The results obtained led to the following conclusions:

- As regards the water content, the value recorded for hamburger paste was 63,03 %, within the maximum permissible limit of 70 %;
- The value obtained in terms of the protein content of hamburger paste was 19.72% being above the minimum accepted value regulated by the legislation in force of 14%;
- The fat content of the sample examined was 12,79%, this value falling within the maximum limit of 30% set by Order 210/2006 for fresh meat products;
- The NaCl content (%) of the analyzed sample was 1.98%, the maximum limit of 3% established by Order 210/2006 on the conditions of admissibility of fresh meat products not being exceeded; C nitrite content in the studied sample was 0 mg/100 g, within the maximum permissible limit being 7 mg /100 g;
- The content of mineral substances in the hamburger paste sample was 1.28%, without a maximum limit being legislated by the legislation in force;
- The energy value calculated for the hamburger paste sample studied was 198.79Kcal/100 g, without setting limits by Romanian legislation in this respect. However, the value obtained is comparable to the values reported by certain researchers in the specialized literature (252 kcal/ 100 g);
- Following the analysis of the Kreiss reaction for the studied sample, it was negative.

Keywords: burger, physical - chemical composition, organoleptic analysis



P47

Vitamins - nutrients in functional foods

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Besides the fats and carbohydrates responsible for the production of energy and proteins that create new tissues and fulfill structural functions, the human body needs more than that to be able to live. For this purpose, a healthy diet must contain vitamins, minerals, essential fatty acids and fibers. Foods that provide additional health benefits through their nutritional content are called functional foods. This category is defined by foods rich in fiber, essential fatty acids, probiotics, vitamins and minerals, in addition to their nutritional value, such as fruits and vegetables. Today, when people are often too busy with what they do every day, the importance of nutrition ends up being underestimated, which are worrying consequences. The ultra-processed food industry makes it easier for a person to assimilate a considerable amount of energy for a day, but all this at the expense of a healthy diet. Ultra-processed foods reduce a lot of the beneficial potential of the elements that make it up through the heating process or even sterilization in the case of cans, but also through baking and the addition of additives that increase the storage time.

Vitamins are indispensable to human life, without them we as beings could not develop normally, they contribute to the processes of transmission of electrical impulses in the brain, to fertility, to the potency of the immune system. Minerals help the proper functioning of the nervous system, muscles and bones, preventing some deficiencies in the human body, such as the intake of iodine from iodized salt. Probiotics are the key to healthy digestion and the prevention of enzyme deficiencies or food intolerances.



Fibers are of particular importance in ensuring a healthy food circuit, through which the entry of nutrients into the blood is controlled. These also bring the feeling of satiety that we are often tempted to achieve due to food hedonism.

Foods such as fruits and vegetables provide the wide range of vitamins necessary for the human body, drinks such as coffee or black tea provide antioxidants, milk and dairy products provide minerals such as calcium, magnesium and zinc, responsible for bone and muscle health but also brain health . . Fermented foods are responsible for the increased intake of enzymes and probiotics, which contribute to healthy digestion. Chia, sunflower, pumpkin or hemp seeds, in addition to the increased energy intake they have thanks to the oils, they also bring an increased fiber ratio, without which digestion is greatly affected, and the feeling of satiety is hard to achieve.

Functional foods can not only prevent the appearance of deficiencies or diseases, they protect and promote proper growth and development from an early age, where they have an even stronger impact.

Keywords: Vitamins, Minerals, Fibers, Probiotics, Healthy diet



P48

Studies on the nutritional principles of red kidney beans

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Currently, a number of poor nutrition practices are contributing to the undernutrition and the overnutrition of populations on a global scale. There are many factors contributing to these conditions, including deficiencies in diet, infections, and socio-cultural factors. There are numerous diseases and conditions that can be caused by malnutrition such as micronutrient deficiencies, diabetes, and other diseases. An effective way to address issues such as protein energy malnutrition and chronic diseases is to shift towards a plant-based diet that provides adequate food.

As explained in this study, the red kidney beans (*Phaseolus vulgaris L.*) are considered to be very high in many active nutritional principles such as proteins (essential amino acids), carbohydrates, dietary fiber, vitamins, and minerals. The predominant macronutrient in red kidney beans that is considered to be the most important is protein. According to studies, red kidney beans contain 22.7% protein, 3.5% mineral, 1% fat and 57.7% carbohydrates. Red kidney beans also contain significant amounts of vitamins from the B group, antioxidants, amino acids, as well as minerals such as iron, calcium, potassium, magnesium, etc., thus presenting numerous health benefits.

According to studies, red kidney beans have an excellent amino acid profile, the main amino acids present being lysine, leucine, aspartic acid, glutamic acid and arginine.



Due to the rich content of active nutritional principles, the consumption of red kidney beans has benefits for the prevention and improvement of symptoms present in cancer, diabetes, cardiovascular diseases, diseases of the gastrointestinal tract, neurodegenerative diseases, etc. It is thus demonstrated that red beans are a functional food with multiple health benefits.

Keywords: red kidney beans, health benefits, functional food, nutritional principles

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P49

Nutritional and sensory evaluation of a product with high nutritional value

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Over time, people have consumed different types of sweets, starting from cheap products to expensive products, or from healthy products, with nutritional benefits to the body, to products that affect its good functioning along the way. Humans have always been on a constant quest to satisfy their sweet tooth, and this fact drives them to turn to new culinary cultures.

It is well known that halva is a dessert original from the Middle East, consumed worldwide, being one of the food products that can be reinterpreted and reinvented by the people. Nutritionally, it is a food with high energy, due to the content of carbohydrates, proteins, fats, including unsaturated fatty acids, which are essential for the human body.

Thus, we reinterpreted the original halva recipe, to which we added vegetable powders, seeds and a different version of sweetener. The product is available in two assortments: the first type is based on the classic recipe which includes: maca powder, carob powder, pine buds, chia seeds, cocoa butter and agave syrup, while the second type is also obtained using the basic recipe with addition of hazelnuts. Afterwards, the two assortments were passed through hazelnut crust.

A comparative study was carried out between the two varieties of halva in terms of sensory and nutritional aspects. The resulting products, namely vegan halva, were highly appreciated from all points of view, revealing once again that our products are superior to those already existing on the market.



In conclusion, the halva obtained with vegetable powders can be classified in the category of new food, healthy food, innovative food and even functional food, which can be consumed at any time of the day by the mass of consumers.

Keywords: halva, vegetable powders, fibers, energy value, health

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The pear jam. The capitalizing on the nutritional potential of *Pyrus Communis* fruits

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Fruits are healthy foods consumed daily by people. They contain a lot many nutrients and beneficial substances for the body; therefore they should be included in our daily diet without fail.

The pear, a typical fruit of temperate climates, with a delicate, pleasant and smooth taste, is consumed in different ways around the world. It is mainly eaten raw, in pies, cakes, jam, compote, but also in many other culinary preparations [1,2]. The sugar content varies depending on the type of pear. Due to the sugar content, pears are mostly preserved in the form of compote or jam. In this form, the fruit retains some of its important properties, but the taste is also kept almost intact [3,4].

The aim of this work was, in addition to related research on the nutritional value of *Pyrus communis* fruits, and the organoleptic characterization of pear jam. Also, this study was conducted to evaluate the Hazard Analysis and Critical Control Points (HACCP) implemented in the pear jam processing line. For this purpose, the HACCP plan was established, the critical control points (CCP) were identified based on the flow diagram of the production line of pear jam with added ginger and walnut kernels.



We chose to make jam from this fruit, with different additions. The pear jam is one of the tastiest and best, but it is quite hard to find in supermarkets or not at all. In combination with different spices or even seeds, which are equally rich in nutrients, the jam can be of higher quality than the simple jam obtained from a single fruit. The taste differs depending on the amount of sweetener used, but the flavor of the fruit used remains the same.

The jam was prepared starting from the modification of a traditional recipe by using walnut kernels and ginger.

A suggestion for future research on the production pear jam. with added ginger and walnut kernels would be increasing awareness and understanding of the HACCP system as a food safety program leading to increased consumer confidence and commercial competitiveness.

Keywords: jam, pear, HACCP, nutritional value

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