**”YOUNG PEOPLE AND MULTIDISCIPLINARY RESEARCH IN APPLIED LIFE SCIENCES” 27 November 2020, Timisoara**

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


# *27 November 2020*

**”YOUNG PEOPLE AND MULTIDISCIPLINARY RESEARCH IN APPLIED LIFE SCIENCES”, 27 November 2020, Timisoara**

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# *General Programme*

**Friday, November 27, 2020**

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| **$9^{30}$ – $9^{50}$** | Participant admission |
| **$10^{00}$ – $10^{05}$** | Symposium opening<br>**Prof. univ. dr. Cosmin Alin Popescu**<br>BUASVM`s Rector |
| **$10^{05}$ – $10^{10}$** | Opening speech<br>**Prof. univ. dr. Isidora Radulov,**<br>BUASVM`s Vice rector for research and innovation |
| $10^{10}$ – $10^{25}$ | Oral Communication $OC_1$ |
| $10^{25}$ – $10^{40}$ | Oral Communication $OC_2$ |
| $10^{40}$ – $10^{55}$ | Oral Communication $OC_3$ |
| $10^{55}$ – $11^{10}$ | Oral Communication $OC_4$ |
| $11^{10}$ – $11^{25}$ | Oral Communication $OC_5$ |
| $11^{25}$ – $11^{40}$ | Oral Communication $OC_6$ |
| $11^{40}$ – $11^{55}$ | Oral Communication $OC_7$ |
| $11^{55}$ – $12^{10}$ | Oral Communication $OC_8$ |
| $12^{10}$ – $12^{25}$ | Oral Communication $OC_9$ |
| $12^{25}$ – $12^{40}$ | Oral Communication $OC_{10}$ |
| $12^{40}$ – $12^{55}$ | Oral Communication $OC_{11}$ |
| $12^{55}$ – $13^{10}$ | Oral Communication $OC_{12}$ |
| $13^{10}$ – $13^{25}$ | Oral Communication $OC_{13}$ |



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|---|---|
| $13^{25} – 13^{40}$ | Oral Communication $OC_{14}$ |
| $13^{40} – 13^{55}$ | Oral Communication $OC_{15}$ |
| $13^{55} – 14^{10}$ | Oral Communication $OC_{16}$ |
| $14^{10} – 14^{25}$ | Oral Communication $OC_{17}$ |
| $14^{25} – 14^{40}$ | Oral Communication $OC_{18}$ |
| $14^{40} – 14^{55}$ | Oral Communication $OC_{19}$ |



# *Programme*

**$9^{30}$ – $9^{50}$** Participant admission

**$10^{00}$ – $10^{10}$** Opening of the Symposium
**Prof. univ. dr. Cosmin Alin Popescu**
**Prof. univ. dr. Isidora Radulov**
*Rector and Vice rector of the Banat's University of Agricultural Sciences and Veterinary Medicine "King Michael I of Romania" from Timişoara*

***Oral communications***

**$10^{10}$ – $10^{25}$** **$OC_1$:** Microbial bioremediation of liquid effluents contaminated with persistent pollutans: the techniques used for identification of mechanisms involved in the process
**Mihaela Roșca, Cătălina Filote, Raluca-Maria Hlihor, Maria Gavrilescu** - *"Ion Ionescu de la Brad" University of Agricultural Sciences and Veterinary Medicine of Iasi*

**$10^{25}$ – $10^{40}$** **$OC_2$:** Identification and characterization of *Bacillus Megaterium* as probiotic bacteria in chickens broiler feed
**Mihaela Dumitru, Nicoleta Lefter, Lavinia Idriceanu, Georgeta Ciurescu, Mihaela Habeanu** - *National Research Development Institute for Animal Biology and Nutrition Balotesti*



**$10^{40}$ – $10^{55}$** **OC3**: Expressiveness of the main characters of „*ROIAL*", a new hot pepper cultivar from vegetable research and development station Buzau
**Ovidia Loredana Agapie, Stănică F., Vînătoru C., Barcanu Elena, Tănase Bianca Elena** - *Vegetable Research and Development Station Buzău*

**$10^{55}$ – $11^{10}$** **OC4**: Nanocarbonic materials based sensing layers for resistive relative humidity and ethanol sensors
**Maria-Roxana Marinescu[1,2], Bogdan-Catalin Șerban [2], Octavian Buiu[2], Cornel Cobianu[2], Marius Bumbac[3], Cristina Nicolescu[3,1]** - [1]*PhD student at University Politehnica of Bucharest, Romania,* [2]*National Institute for Research and Development in Microtechnologies, IMT-Bucharest, Voluntari, Romania, University Valahia of Târgoviște, Romania*

**$11^{10}$ – $11^{25}$** **OC5:** Study of milk and dairy product consumption habits
**Maria Ruzsa Dzsenifer, Karoly Bodnar**, Universitatea Szent Istvan, Hungary

**$11^{25}$ – $11^{40}$** **OC6:** COVID-19 and animal health
**Clémence Meunier, Léa Mantei, Diane Mourgues, M. Chevalier, K. Ghannouchi, H. Guidara, Corina Pascu, Viorel Herman,** *Banat's University of Agricultural Sciences and Veterinary Medicine "King Michael I of Romania" from Timisoara. Faculty of Veterinary Medicine*



**$11^{40} – 11^{55}$** **$OC_7$:** Preliminary studies on obtaining microorganisms beneficial to plant development and protection
**Anton Ghiga, Irina Grebenisan**, *University of Agronomic Sciences and Veterinary Medicine of Bucharest*

**$11^{55} – 12^{10}$** **$OC_8$:** Expression of HS90 gene in the cryopreserved bovine spermatozoa
**Filip Benko, Alexandra Geschwandtnerová, Jana Žiarovská, Norbert Lukáč, Eva Tvrda,** *Slovak University of Agriculture, Nitra, Slovakia*

**$12^{10} – 12^{25}$** **$OC_9$:** Community gardens as a means of ecological and civic education: the teachers' perception on the concept of community garden in school
**Andreea Melinescu, Sina Cosmulescu,** *University of Craiova, Faculty of Horticulture, Doctoral School of Plant and Animal Resources Engineering*

**$12^{25} – 12^{40}$** **$OC_{10}$:** Preparation and characterization of polyvinyl alcohol films modified with essential oils
**Lucica Pop[1], Anca Peter[1], Anca Mihaly-Cozmuta[1], Patrizia Fava[2], Andrea Pulvirenti[2],** *[1]Technical University Cluj-Napoca, North University Center of Baia Mare, Department of Chemistry and Biology, Victoriei 76, 430122 Baia Mare, Romania, [2]University of Modena and Reggio Emilia, Department of Life Sciences, Amendola 2, 42122 Reggio Emilia, Italy*



**$12^{40} – 12^{55}$** **OC$_{11}$:** Job satisfaction and employee's commitment in the hotel
**Diana Elena Constantina, Andreia Schneider, Andrea Nagy, Sebastian Bonchis**, *Universitatea de Vest Timișoara*

**$12^{55} – 13^{10}$** **OC$_{12}$:** The surgical management of an inguinal hernia in a female dog - a case report
**Alexandra Neamțu, L. Burtan, D.G. Drugociu,** *University of Agricultural Sciences and Veterinary Medicine "Ion Ionescu de la Brad" from Iași, Faculty of Veterinary Medicine*

**$13^{10} – 13^{25}$** **OC$_{13}$:** Considerations regarding the evolution of the landscape in the area of the former bauxite quarries from Ohaba – Ponor
**Nicolae Sîli, Elena-Maria Vesa, Florin Faur, Izabela-Maria Apostu,** *University of Petrosani*

**$13^{25} – 13^{40}$** **OC$_{14}$:** The effect of *Enterococcus faecium* induced in vitro infection in bovine semen
**Michal Ďuračka, Lucia Galovičová, Miroslava Kačániová, Norbert Lukáč, Eva Tvrdá,** *Slovak University of Agriculture, Nitra, Slovakia*

**$13^{40} – 13^{55}$** **OC$_{15}$:** Effect of spacing on the yield and yield contributing characters of four varieties of transplanted aman rice
**Goswami Chayon et al.,** *Department of Biochemistry and Molecular Biology, Bangladesh Agricultural University*



**$13^{55} – 14^{10}$** **OC$_{16}$:** Brewer's yeast (*Saccharomyces cerevisiae*) – A review

**Christine Alexandra Lucan (căs. Banciu)[1,3], Iulia Galan[2,3], Anamaria Guran[3], Cristina Liliana Mitroi[3], Nicoleta Gabriela Hădărugă[3],** *[1]European Drinks SA, Stei, Bihor, Romania, [2]Fornetti Romania, Timişoara, Romania, [3]Faculty of Food Engineering, Banat's University of Agricultural Sciences and Veterinary Medicine "King Michael I of Romania" from Timişoara*

**$14^{10} – 14^{25}$** **OC$_{17}$:** Analysis of natural and anthropic resources in Pogăniș meadow in a view of the development of tourism and the local economy

**Daniela Tătaru, Cristina Baciu, Nicoleta Mateoc-Sîrb,** *State University of the Republic of Moldova, USAMVB Timisoara*

**$14^{25} – 14^{40}$** **OC$_{18}$:** Preliminary data on predictive frequency of dystocia based on indirect pelvimetry in romanian spotted dairy cows

**Codrean F., Torda I., Marc Simona,** *Banat's University of Agricultural Sciences and Veterinary Medicine "King Michael I of Romania" from Timisoara. Faculty of Veterinary Medicine*

**$14^{40} – 14^{55}$** **OC$_{19}$:** Antifungal activity of root extract of asclepias *Syriaca L.* on causal agents of apple bitter rot

**Dunja Živanov, Mladen Petreš, Milena Popov, Mila Grahovac,** *University of Novi Sad*



## *Section: "Young researchers in food engineering"*

# *Posters*

**P1** Phenolic compounds evolution during ripening of red grapes Feteasca neagra variety (*Vitis vinifera*)
**Elena Iosip (Dragomir), Gabriela Rapeanu, Gabriela Elena Bahrim, Nicoleta Stanciuc, Iuliana Aprodu**
*Faculty of Food Science and Engineering, University of "Dunărea de Jos", Galati, Domneasca Street 111, Galati, Romania*

**P2** Evolution of physicochemical parameters during ripening of grapes (*Vitis vinifera* cv. Șarba)
**Mihaela Manuela Hozoc (Nedelcu), Gabriela Rapeanu, Nicoleta Stanciuc, Iuliana Aprodu, Gabriela Elena Bahrim**
*Faculty of Food Science and Engineering, University of "Dunărea de Jos", Galati, Domneasca Street 111, Galati, Romania*

**P3** Effect of rosehip powder addition on dough development and ability of gas formation and retention during fermentation
**Nicoleta Pircu Vartolomei, Maria Turtoi**
*Faculty of Food Science and Engineering, University of "Dunărea de Jos", Galati, Domneasca Street 111, Galati, Romania*



**P4** Betalains recovery from beetroot skins using different extraction methods

**Silvia Lazăr (Mistrianu), Gabriela Râpeanu, Nicoleta Stănciuc, Oana Emilia Constantin, Iuliana Aprodu**

*Faculty of Food Science and Engineering, University of "Dunărea de Jos", Galati, Domneasca Street 111, Galati, Romania*

**P5** Kinetics of thermal degradation of anthocyanins in correlation with the antioxidant activity of biologically active compounds in the extract of Purple Corn (*Zea mays* L.)

**Mioara Gabriela Slavu ( Ursu), Iuliana Aprodu, Iuliana Banu, Gabriela Râpeanu, Nicoleta Stănciuc**

*Faculty of Food Science and Engineering, University of "Dunărea de Jos", Galati, Domneasca Street 111, Galati, Romania*

**P6** Microwave-assisted extraction of phenolic compounds from red grape skins (*Babeasca neagra* variety)

**Daniela Serea, Gabriela Bahrim, Gabriela Râpeanu, Oana-Viorela Nistor, Nicoleta Stănciuc**

*Faculty of Food Science and Engineering, University of "Dunărea de Jos", Galati, Domneasca Street 111, Galati, Romania*

**P7** Evaluation of biological active compounds found in sea buckthorn fruits

**Diana Roman, Gabriela Râpeanu, Nicoleta Stanciuc, Iuliana Aprodu, Gabriela Bahrim**

*Faculty of Food Science and Engineering, University of "Dunărea de Jos", Galati, Domneasca Street 111, Galati, Romania*



**P8** The effect of lignin concentration and total phenolic hydroxyl content/glucosamine ratio on the enzymatic coupling reactions of lignins with glucosamine

**Firuta Ionita Fitigau[1], Francisc Peter[2], IoanTaranu[1], Iuliana Sebarchievici[1]**

*[1]National Institute of Research-Development for Electrochemistry and Condensed Matter, A. P. Podeanu 144, 300569 Timişoara, Romania; [2]University "Politehnica" of Timişoara, Faculty of Industrial Chemistry and Environmental Engineering, C. Telbisz 6, 300001 Timişoara, Romania*

**P9** Enzyme assisted extraction of phytochemicals from red onion skins as an approach to novel extraction technology

**Florina Stoica, Gabriela Rapeanu, Nicoleta Stanciuc, Iuliana Aprodu, Gabriela Elena Bahrim**

*Faculty of Food Science and Engineering, University of "Dunărea de Jos", Galati, Domneasca Street 111, Galati, Romania*

**P10** Research on the biochemical quality of fruits on some highbush blueberry cultivars

**Mihaela Ciucu (Paraschiv)[1,2], Dorel Hoza[1]**

*[1]University of Agricultural Sciences and Veterinary Medicine, Bucharest; [2]Research Institute for Fruit Growing Pitesti, Romania*

**P11** Cryoprotective effect of encapsulation on bakery yeast (*Saccharomyces cerevisiae*)

**Robert Apjok, Anca Mihaly Cozmuta, Anca Peter, Leonard Mihaly Cozmuta**

*Technical University of Cluj Napoca, North Universitary Center of Baia Mare, Victoriei Str. 76, Baia Mare*



**P12** Safety aspects related to the Bisphenol A migration process in packed meat and milk products – a review

**Elena Ungureanu [1,2], G. Mustățea[1], Mona Elena Popa[2]**

*[1]National Research & Development Institute for Food Bioresources – IBA Bucharest, 6 Dinu Vintila Street, 021102, Bucharest; [2]University of Agronomic Science and Veterinary Medicine, Faculty of Biotechnology, 59 Marasti Boulevard, 011464, Bucharest*

**P13** Effect of Mixing Coffee with Some Therapeutic Potential Plants on Some Quality Indicators of the End Product: A Case Study

**I.Gherman, Ersilia Alexa, Ileana Cocan, Monica Negrea, Bogdan Petru Rădoi, Alexandru Rinovetz**

*Faculty of Food Engineering, Banat's University of Agricultural Sciences and Veterinary Medicine "King Michael I of Romania" from Timisoara, Calea Aradului 119, Timisoara 300645, Romania*

**P14** Freeze-drying and food matrix architecture

**Liana Paula Mone, Laura Rădulescu, Bogdan Petru Rădoi, Alexandru Rinovetz**

*Faculty of Food Engineering, Banat's University of Agricultural Sciences and Veterinary Medicine "King Michael I of Romania" from Timisoara, Calea Aradului 119, Timisoara 300645, Romania*



**P15** Nutritional and sensory evaluation of gluten-free cake obtained from mixtures of rice flour, almond flour and arrowroot flour

**Casiana - Damaris Martinescu, Natalia-Roxana Sârbu, Ariana- Bianca Velciov, Daniela Stoin**

*Faculty of Food Engineering, Banat's University of Agricultural Sciences and Veterinary Medicine "King Michael I of Romania" from Timisoara, Calea Aradului 119, Timisoara 300645, Romania*

**P16** Obtaining and characterizing Tokaj liqueur wine

**Marcela Loredana Rusu**

*Faculty of Food Engineering, Banat's University of Agricultural Sciences and Veterinary Medicine "King Michael I of Romania" from Timisoara, Calea Aradului 119, Timisoara 300645, Romania*

**P17** Appetizer cakes - obtaining and evaluating the protective quality

**Nicoleta-Mirela Voin, Delia-Gabriela Dumbravă**

*Faculty of Food Engineering, Banat's University of Agricultural Sciences and Veterinary Medicine "King Michael I of Romania" from Timisoara, Calea Aradului 119, Timisoara 300645, Romania*

**P18** Taurine and Caffeine Simultaneous Determination in Energy Drinks

**Raluca Tampu[1], Adriana Fînaru[1], Claire Elfakir[2]**

*[1]Faculty of Engineering, "Vasile Alecsandri" University of Bacau, Calea Marasesti 157, Bacau, 600115, Romania; [2]Institute of Organic and Analytical Chemistry CNRS UMR 7311, University of Orléans, Chartres, BP 6759, 45067, Orléans, France*



**$P_{19}$** Characterization of high protein raw truffles

**Valentina Murgoi, Georgiana - Felicia Bustan, Mario-Daniel Rusu, Adrian Riviş, Daniela Stoin, Ariana - Bianca Velciov**

*Faculty of Food Engineering, Banat's University of Agricultural Sciences and Veterinary Medicine "King Michael I of Romania" from Timisoara, Calea Aradului 119, Timisoara 300645, Romania*

**$P_{20}$** Innovative raw-vegan chia dessert - total polyphenols, ascorbic acid and antioxidant activity analysis

**Adelina Oana Coacă, Giorgiana Ciortan, Radu Tulpan, David Vasiliu, Georgeta-Sofia Pintilie, Delia -Gabriela Dumbravă**

*Faculty of Food Engineering, Banat's University of Agricultural Sciences and Veterinary Medicine "King Michael I of Romania" from Timisoara, Calea Aradului 119, Timisoara 300645, Romania*

**$P_{21}$** Development and characterization of an innovative prototype of pork sausage

**Georgiana Ciortan, Alexandra Duica, Paul Petridean, Adelina Coaca, Ariana Velciov, Sofia Popescu, Antoanela Cozma, Delia Dumbrava**

*Faculty of Food Engineering, Banat's University of Agricultural Sciences and Veterinary Medicine "King Michael I of Romania" from Timisoara, Calea Aradului 119, Timisoara 300645, Romania*



**$P_{22}$** Determination of proximate composition for some dark chocolate types

**Andreea - Ionela Birtea, Adelina Avrămuş, Delia Patricia Ivăniş, Georgeta Sofia Popescu, Antoanela Cozma, Ariana Bianca Velciov**

*Faculty of Food Engineering, Banat's University of Agricultural Sciences and Veterinary Medicine "King Michael I of Romania" from Timisoara, Calea Aradului 119, Timisoara 300645, Romania*

**$P_{23}$** Comparative study concerning the use of tomato juice added to food products of animal origin

**Alexandra Oana Duică, Larisa Mărmăneanu, Giorgiana Ciortan, Sofia Pintilie, Ersilia Alexa, Ariana Velciov, Antoanela Cozma**

*Faculty of Food Engineering, Banat's University of Agricultural Sciences and Veterinary Medicine "King Michael I of Romania" from Timisoara, Calea Aradului 119, Timisoara 300645, Romania*

**$P_{24}$** Food and economic importance of tapioca roots

**Alice Camelia Vasiloni, Camelia Moldovan**

*Faculty of Food Engineering, Banat's University of Agricultural Sciences and Veterinary Medicine "King Michael I of Romania" from Timisoara, Calea Aradului 119, Timisoara 300645, Romania*



**P25** Characterisation of *Carum carvi* L. Esential Oil and its Activity against Food Poisoning Pathogens

**Silvana Radu, Florina Radu**
*Faculty of Food Engineering, Banat's University of Agricultural Sciences and Veterinary Medicine "King Michael I of Romania" from Timisoara, Calea Aradului 119, Timisoara 300645, Romania*

**P26** Whole barley (*Hordeum vulgare* L.) culinary application and health implications

**Jelena Milutinovic[1], Nicoleta Gabriela Hadaruga[2], Georgeta Pop[1]**
*[1]Faculty of Agriculture, Banat's University of Agricultural Sciences and Veterinary Medicine "King Michael I of Romania" from Timişoara; [2]Faculty of Food Engineering, Banat's University of Agricultural Sciences and Veterinary Medicine "King Michael I of Romania" from Timişoara*

**P27** Bread from traditional product to molecular gastronomy

**Andreea Dan, Aurel-Melu Suru-Andrei, Adrian-Alexandru Dragomir, Andreea Sava, Cristina Liliana Mitroi, Adrian Riviş, Nicoleta Gabriela Hădărugă**
*Faculty of Food Engineering, Banat's University of Agricultural Sciences and Veterinary Medicine "King Michael I of Romania" from Timisoara, Calea Aradului 119, Timisoara 300645, Romania*



**P28** Pasta from traditional product to molecular gastronomy

**Simelda Elena Zippenfening, Ramona Bănescu, Giulia Mădălina Golea, Tamara Vlăduţescu, Călina Soare, Adrian Riviş, Nicoleta Gabriela Hădărugă**

*Faculty of Food Engineering, Banat's University of Agricultural Sciences and Veterinary Medicine "King Michael I of Romania" from Timisoara, Calea Aradului 119, Timisoara 300645, Romania*

**P29** Legislative aspects on food security

**Claudia Izabela Oprinescu, Anca Morega, Adelina Pop, Celilia Ulici, Alina Tiron, Marius Ioan Cugerean, Răzvan Drăghici, Nicoleta Gabriela Hădărugă, Adrian Riviş**

*Faculty of Food Engineering, Banat's University of Agricultural Sciences and Veterinary Medicine "King Michael I of Romania" from Timisoara, Calea Aradului 119, Timisoara 300645, Romania*

**P30** Authenticity of fruits in terms of geographical origin

**Dina Gligor (căs. Pane), Raymond Szakal, Marius Daniel Simandi, Lucian Radu, Nicoleta Gabriela Hădărugă, Adrian Riviş**

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# BOOK OF ABSTRACT


## INTERNATIONAL SCIENTIFICAL SYMPOSIUM”YOUNG PEOPLE AND MULTIDISCIPLINARY RESEARCH IN APPLIED LIFE SCIENCES”
## 27 November 2020 Timisoara

*Section: “Young researchers in food engineering”*

**Timişoara, 2020**



**OC4**

## Nanocarbonic materials based sensing layers for resistive relative humidity and ethanol sensors

**Maria-Roxana Marinescu[1,2], Șerban Bogdan-Catalin[2], Buiu Octavian[2], Cobianu Cornel[2], Bumbac Marius[3], Nicolescu Cristina[3,1]**

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*[2]National Institute for Research and Development in Microtechnologies, IMT-Bucharest, Voluntari, Romania*
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Humidity has an essential role in the processing and storage of food. Continuous monitoring of this parameter is critically important in order to maintain an appropriate climate in raw material storage, maturation/fermentation rooms, maintaining the ideal conditions for refrigerators, freezers and prevent germ formation. Moreover, it was found that ethanol is, along with carbon dioxide, the main volatile spoilage metabolite in fresh-cut fruit.

It is a purpose of this communication to present the development of resistive relative humidity and ethanol sensors based on oxidized carbon nanohorns (CNHox) and their nanocomposites as sensing layers. Thus, different nanocomposites such as CNHox / polyvinylpyrrolidone, CNHox / polyethylene glycol - polypropylene glycol - polyethylene glycol), CNHox / $SnO_2$ / ZnO / polyvinylpyrrolidone, (CNHox/ $SnO_2$/PVP) were tested as sensing films for relative humidity and ethanol using a resistive sensor architecture. The proposed design of the device employes: a dielectric substrate ($Si/SiO_2$), metal electrodes and the sensitive layer.



The carbonaceous nanocomposite is deposited on the electrodes by using spin coating and drop-casting methods. The electrical resistance of these layers will change proportional to the relative humidity or ethanol level in the working environment.

The structures exhibited good RH and ethanol sensitivity, either in humid nitrogen or in ethanol -enriched nitrogen environment.

***Keywords:*** humidity, ethanol, nanocarbonic materials, sensors, food monitoring.

***Acknowledgement:*** CASTOL PED project, funded by UEFISCDI (2020 – 2022).



**OC$_{10}$**

# Preparation and characterization of polyvinyl alcohol films modified with essential oils

**Lucica Pop[1], Anca Peter[1], Anca Mihaly-Cozmuta[1], Patrizia Fava[2], Andrea Pulvirenti[2]**

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Antimicrobial packaging is an active system used to prevent the development of surface microflora, obtained by adding active agents into the packaging film. The active packaging systems that can extend the shelf life and food safety of products by antimicrobial protection gained interest.

The aim of this paper was to obtain modified films based on polyvinyl alcohol (PVA), by adding carvacrol, nutmeg and oregano essential oils, respectively and to characterize them by evaluating the tensile strength, the elongation at break and the antimicrobial activity. Moreover, the wettability of the PVA modified with carvacrol onto three types of cheese was also determined.

The results have showed that the tensile strength and the elongation at break decrease as the essential oil concentration rises up to 0.75% (mass percentage). No microbial cultures developed at the contact between the film and the culture medium showing that no microorganisms would develop even at the contact of the film with food. The wettability results demonstrated that PVA modified with carvacrol 0.25% and 0.50%, respectively are appropriate for the storage of cheese with different moisture and fat content.

***Keywords:*** polyvinyl alcohol, essential oils, PVA



**OC$_{14}$**

# Brewer's yeast (*Saccharomyces cerevisiae*) – A review

**Christine Alexandra Lucan (căs. Banciu)[1,3], Iulia Galan[2,3], Anamaria Guran[3], Cristina Liliana Mitroi[3*], Nicoleta Gabriela Hădărugă[3]**

*[1]European Drinks SA, Stei, Bihor, Romania, [2]Fornetti Romania, Timişoara, Romania, [3]Faculty of Food Engineering, Banat's University of Agricultural Sciences and Veterinary Medicine "King Michael I of Romania" from Timişoara*
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There are over 1,500 yeast strains identified and found naturally in nature. The species Saccharomyces cerevisiae is used in the manufacture of yeast for bakery. Yeast is a product obtained from the species Saccharomyces cerevisiae and is used mainly for the preparation of bread (and bakery products) or in the beer industry. There are three types of yeast, with different roles and applications:bakery yeast, brewer's yeast and nourishing yeast.

Yeasts, including brewer's yeasts, are single-celled microorganisms ("clogged fungi") that, in favorable nutrient media, reproduce vegetatively by budding. Like eukaryotes, they have a nucleus separate from the cytoplasm of a membrane. Both together form the protoplasm, which is separated from the medium containing a number of cellular organs Table 1 lists the functions of the various components of yeast cells [1,2,3].

1. Bauer FF, Govender P, Bester MC (2010) Yeast flocculation and its biotechnological relevance. Appl Microbiol Biotechnol 88:31-39.
2. Soares EV (2010) Flocculation in Saccharomyces cerevisiae: a review. J Appl Microbiol 110:1-18.
3. Alberts B, Johnson A, Lewis J, Raff M, Roberts K, Walter P. Molecular biology of the cell. Fifth ed. New York: Garland Science, 2008.

***Keywords:*** *Saccharomyces cerevisiae*, Brewer's yeast,

**Acknowledgments**: This research was funded by BUASVM, "Recovery and recovery of high value bioactive compounds from waste from the beer industry – **Re-Beer", Research projects - Internal competition, Financing contract no.56/05.06.2020**



**P1**

# Phenolic compounds evolution during ripening of red grapes Feteasca neagra variety (*Vitis vinifera*)

**Elena Iosip (Dragomir)*, Gabriela Rapeanu, Gabriela Elena Bahrim, Nicoleta Stanciuc, Iuliana Aprodu**

*Faculty of Food Science and Engineering, University of "Dunărea de Jos", Galati, Domneasca Street 111, Galati, Romania*
*Corresponding author:* ela_drag@yahoo.com

*Feteasc㠠neagră* is an ancient indigenous grape variety from Romania, which gives nice coloured rich in phenolic compound wines.

The aim of the study was to assess the dynamics of the phenolic compounds accumulation in the red grapes *Feteasc㠠neagră* variety, during grape ripening (2019-2020). The following parameters were evaluated: sugar content, acidity, pH, weight of 100 berries, anthocyanins and total phenolic compounds, using OIV methods.

The results showed that sugar content of the red grapes *Feteasc㠠neagră* variety at full maturity ranged from 196-232 g/L, total acidity of grapes at full maturity presented values between 6.2 to 7.1 g/L expressed in sulfuric acid, while the weight of 100 berries gives values ranging from 131-168 g. The polyphenolic content of the grapes at full maturity ranged between 3.4 to 4.9 g/kg, increasing and anthocyanins content was in the range of 891-1256 mg/kg.

Climatic conditions of each vintage influence the final amount of polyphenols in grapes. Presence of rains is causing a slight decrease in polyphenols and cold and wet weather is leading to a slowdown in the accumulation of anthocyanins in the skins of the berries.

***Keywords:*** red grapes, anthocyanins, sugar, acidity, polyphenolic compounds



**P$_2$**

# Evolution of physicochemical parameters during ripening of grapes (*Vitis vinifera* cv. Șarba)

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Sarba is a Romanian variety of white grapes obtained at the Research-Development Station for Viticulture and Winery Odobești by crossing two very valuable varieties: Tâmăioasă Românească and Italian Riesling.

The purpose of this study was to investigate the evolution of physicochemical parameters during ripening of flavoured white grapes (Șarba variety) during the vintage of 2019-2020 period. For physico-chemical characterisation the main characteristics of grapes (sugar content, titrable acidity, pH, the weight of 100 berries, total polyphenolic content) was carried out using OIV methods.

The results revealed that sugar content of the Șarba grapes variety at full maturity ranged from 200-241 g/L, the total acidity of grapes at full maturity recorded values between 3.6 to 5.5 g/L expressed in sulfuric acid, while the weight of 100 berries gives values ranging from 161-173 g. The polyphenolic content of the grapes at full maturity ranged between 2.2 to 2.80 g/kg, increasing from veraison to full maturity and then after a slight decrease was registered.

***Keywords*:** white grapes, sugar, acidity, polyphenolic compounds



**P3**

# Effect of rosehip powder addition on dough development and ability of gas formation and retention during fermentation

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In developing process gluten network is formed in the bread dough. This network has an essential role in the retention of the gas (carbon dioxide) generated by the yeast during the fermentation of the dough. The ability of gas retention could be improved by the addition of small quantities of different ingredients into the wheat flour (e.g., enzymes, emulsifiers, antioxidants, etc.). This study aims to investigate the influence of rosehip powder addition on dough development and its ability of gas production and retention during fermentation. The dough was prepared in a Rheofermentometer F3 Chopin from white wheat flour 550 type with the addition of 1.0, 2.5 and 5.0 % rosehip powder. A control sample with no addition was used. The test duration was 180 min. The parameters of the dough development (maximum dough height, dough height at the end of the test, dough tolerance, and dough fall) and of gaseous release (total volume of $CO_2$, lost $CO_2$ volume, retention $CO_2$ volume, retention coefficient, time to reach the maximum dough height, and time when $CO_2$ loss starts) were determined and discussed. The discussion of the results reveals that rosehip powder addition improves the dough rheology similar to synthetic ascorbic acid. Further studies to establish the optimal dose of rosehip powder addition and to study the influence on bread quality are necessary.

***Keywords***: wheat flour, rosehip powder, dough rheology, gas release, rheofermentographic test



**P4**

# Betalains recovery from beetroot skins using different extraction methods

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Red beetroot (*Beta vulgaris* L.) is an important and rich source of bioactive compounds, due to the presence of betalains. Large amounts of red beetroot byproducts (skins, pomace) are resulted from its processing. Betalains are vegetal pigments, derived from the betalamic acid, and are classified in betacyanins and betaxanthins. Betalains are included in a group of water-soluble polyphenolic compounds, with important biological activities such as antidiabetic, anti-inflammatory, anti-carcinogenic, and antioxidant properties.

The objective of this study was to evaluate the content of betalains from beetroot skins using two different extraction methods such as conventional extraction and ultrasound-assisted extraction.

The results showed that the highest amount of betalains was obtained using the conventional extraction method (1.185 ± 0.76 mg/g dw). Furthermore, in the case of ultrasound-assisted extraction, the total betalain content was 1,047 ± 0,03 mg/g dw.

Red beetroot skins are a renewable raw material and may serve as a new high-value ingredient, due to the presence of bioactive compounds.

***Keywords***: betalains, beetroot skins, extraction methods, polyphenolic compounds



**P5**

# Kinetics of thermal degradation of anthocyanins in correlation with the antioxidant activity of biologically active compounds in the extract of Purple Corn (*Zea mays* L.)

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Purple corn (*Zea mays L.*) is an excellent source of natural pigments due to its high content of phenolic compounds, namely anthocyains. The aim of the present study is the characterization of phytochemical profile of a purple corn extract in terms of total phenolic compounds, total flavonoid contents, total anthocyanins content, antioxidant activity and chromatographic profile. The kinetics of thermal degradation of anthocyanins in correlation with antioxidant activity was also evaluated. The thermal degradation parameters of antioxidant activity were significantly lower compared to those for thermal degradation of anthocyanins. The z-values started from 61.72 $\pm$ 2.28°C for anthocyanins and 75.75 ± 2.87°C for antioxidant activity. The simulated digestion showed that the heat treatment increased the degradation rate of anthocyanins in simulated intestinal juice. The thermal degradation of anthocyanins was positively correlated with the *in vitro* decrease of antioxidant activity**.** The study of kinetic parameters is essential to predict the quality changes that occur during thermal processing of different foods.

***Keywords***: purple corn, anthocyanins, antioxidant activity, thermal degradation, thermostability.



**P6**

## Microwave-assisted extraction of phenolic compounds from red grape skins (*Babeasca neagra* variety)

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Red grape skins (*Babeasca neagra* variety) represent a valuable byproduct resulted in rose winemaking, due to their content in polyphenolic compounds, such us: flavan-3-ols, anthocyanins, flavonols, phenolic acids, etc.

The aim of this study was to extract phenolic compounds from red grape skins (Babeasca neagra variety) using a microwave oven. For microwave-assisted extraction, power (525 and 1050 W), extraction time (5, 10 seconds), solvent concentration (aqueous solutions of 50, 70 and 96% ethanol) was selected as independent variables. The dependent variables were total phenolic content (TPC), total monomeric anthocyanin content (TMA), total flavonoid content (TFC) and antioxidant activity (AA).

The highest total monomeric anthocyanin (TMA) content of 7.05 ± 0.79, mg C3G / g d.w., the total polyphenols (TPC) of 4.99 ± 1.13 mg GAE / g d.w., and the total flavonoid content (TFC) of 0,92 ± 0,16 mg CE/g d.w., was obtained using the following extraction conditions: 10 seconds of treatment at 1050 W, solid solvent ratio of 1:10 and ethanol-water mixture at a ratio of 70:30.



Red grape skin (*Babeasca neagra* variety) seems to be a valuable source that can be used to recover high value-added compounds for the formulation of new products (food supplements, cosmetics, medicines).

***Keywords***: microwave assisted extraction, red grape skin (Babeasca neagra variety), phenolic compounds, antioxidant capacity



**P7**

## Evaluation of biological active compounds found in sea buckthorn fruits

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Sea buckthorn (*Hippophae rhamnoides L.*) is a shrub that can grow up to 5-6 meters high. The branches have many long, very sharp stems, and the leaves are narrow, colored green-silver. The flowers, yellow-brown, are small and appear in March - April. The main parts used in food production are fruits. Fruits are rich in vitamin, as well as other vitamins E, K, F, P, B (B2, B6, B9, choline, inositol), carotenoids (beta carotene, xanthophils), minerals, polyunsaturated fatty acids, complex oils, serotonin, volatile oils, flavonoids, pectins, tannins, amino acids, enzymes, phytosterols etc. Because of their composition fruit extracts present antioxidant, emollient, cytoprotective, immunostimulatory, vitaminizing, depurative, anti-inflammatory effect.

The aim of the present study was to extract the compounds with biological activity and to characterize them in terms of carotenoids, flavonoids and total polyphenols content and antioxidant activity.

Three methods were used for biological active compounds extraction: conventional solvent extraction, ultrasound-assisted extraction and microwave-assisted extraction. The combination of polar and non-polar solvents enhances the solubilization of non-polar carotenoids (lycopene and β-carotene), while polar solvents (ethanol, acetone and ethyl acetate) solubilize polar compounds.



The higher yield of the carotenoids extraction was found using the solvent mixture (in combination with ultrasonic extraction) ethyl acetate:hexane (2:1) when the total carotenoids content was 42.43±0.17 µg/g DW, β-caroten content had a value of 35.35±0.063 µg/g DW and lycopene - 9,815±0,029 µg/g DW. The mixture of ethanol:acetone (4:3) revealed the highest antioxidant potential of 3.465±0.028 µg Trolox/ml extract (ABTS-method). The lowest values for carotenoid content extraction were found for sunflower oil samples in combination with microwave assisted extraction.

Higher values for the total content of polyphenols and flavonoids were recorded by ultrasonic assisted extraction combined with ethanol: acetone (4: 3) solvent mixtures, the values were 805.34 ± 5.5mg GA / g DW. The lowest polyphenol content was found for extraction using the mixture of ethyl acetate: hexane (2: 1), with values of 61.57 ± 1.76 mg GA / g DW.

The ultrasonic assisted extraction seems to be more useful for biological active compounds extraction compared to the other ones used.

***Keywords***: *Hippophae rhamnoides L.*; bioactive compounds; carotenoids; antioxidant activity; ultrasound-assisted extraction (UAE); microwave-assisted extraction (MAE; conventional maceration.



**P8**

# The effect of lignin concentration and total phenolic hydroxyl content/glucosamine ratio on the enzymatic coupling reactions of lignins with glucosamine

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Lignin degradation is in a central position in the earth's carbon cycle, because most renewable carbon is either in lignin or in compounds protected by lignin from enzymatic degradation (cellulose and hemicellulose). The ability of laccase to facilitate grafting hydrophilic compounds, namely glucosamine to lignin in acetone/water mixtures aiming to obtain grafted novel lignin derivatives with new functionalities was assayed by cyclic voltammetry. Four different technical lignins from hardwood, softwood, grasses and wheat straw obtained by different isolation technology (e.g. organosolv, kraft and soda) previously extracted with 50% (v/v) acetone-water mixture were used. A comparative investigation of the effect of experimental parameters, such as lignin and co-substrate concentrations, may help us elucidate the suitable experimental conditions for an effective catalysis of the different lignin-glucosamine systems proposed.

***Keywords***: lignin, phenolic hydroxyl, enzymatic, glucosamine



**P9**

## Enzyme assisted extraction of phytochemicals from red onion skins as an approach to novel extraction technology

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Large quantities of onion by-products are produced by consumption of onions both domestically and industrially. Red onion skins are a good source of valuable bioactive compounds such as polyphenols, flavonoids, particularly anthocyanins and flavonols, that possess antioxidative, anti-mutagenic and anti-inflammatory properties.

The purpose of this study was to investigate the effect of enzyme assisted extraction of bioactive compounds from red onion skins using different enzymatic preparation (cellulases, xylanases and pectin metylesterases) and extraction times. The onion skins extract was evaluated in terms of total anthocyanins (TMA), flavonoids (TFC), total phenolics compounds (TFC) and the antioxidant activity (DPPH).

The results showed that the highest yield of antioxidant activity was obtained with enzymatic preparation having cellulase activity (60.16±0.78 mMol of Trolox/g d.w.) after 60 minutes of extraction at 40°C. The maximal anthocyanins content was found using enzymatic preparation with pectin methylesterase activity after 60 minutes of extraction at 40°C (66 ± 9 mg C3G/100 g d.w.). Also, the highest quantity of TFC (142.09±10.87 mg QE/g d.w.) and TPC (60.47±4.7 mg GAE/g d.w.) was obtained using enzymatic preparation with xylanase activity.



Onion skins may serve as a new and natural food ingredient, due to the presence of bioactive compounds, which have health benefits.

***Keywords*:** red onion skins, phytochemicals, enzymatic extraction, antioxidant activity



**P10**

# Research on the biochemical quality of fruits on some highbush blueberry cultivars

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The highbush blueberry *(Vaccinium corymbosum L.)* is found in the flora of the North-Eastern United States and South-Estern Canada. Blueberries are an important source of antioxidants. These compounds concentration vary according to the cultivars. This study objective was to determine biochemical composition of fruits at optimal harvest maturity on nine varieties.The biochimical indicators studied were: total dry mater content, soluble dry matter, total titrable acidity, sugar content, vitamin C, anthocyanins and polyphenols. Vitamin C was analyzed iodometrically, total sugars by Fehling-Soxhlet method, total acidity was measured by titrable method and the soluble dry matter content was determined using a refractometer. Total poliphenols and anthocyanins content of the fruits were analyzed with colorimetric methods. The experimental plot was established in the year 2020 inside a farm from the Arges Meadow. The results of chemical composition analyses showed that the fruits of 'Compact' has a the highest total soluble solid content (16.6%).

The highest vitamin C level (15.31 mg/100 g FW) was determined in the fruits of 'Blueray'. 'Elliot' fruits presented higher values of titratable acids content (1.18%), total poliphenol and anthocyanins contents (6383.76 mg GAE/kg FW, respectively 3120.54 mg/kg FW). 'Elliot' variety is distinguished by the highest content of antioxidant compounds.

***Keywords*:** blueberry, fruit_quality, dry_mater, sugar_content, anthocyanins, polyphenols.



P11

# Cryoprotective effect of encapsulation on bakery yeast (*Saccharomyces cerevisiae*)

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The present study investigates the efficiency of encapsulation on cryoprotection of bakery yeast. Different beads containing alginate-yeast (CAY) and alginate-starch- yeast (CASY) were prepared and characterized in term of encapsulation parameters. One type of each formula with the best encapsulation parameters was selected, frozen stored for 1 month and 3 months, respectively and characterized in terms of morphology, FTIR spectra and cryotolerance of yeasts in relation to free dry yeasts (DY). Experimental results indicate that the alginate-yeasts structure of the capsules provided better yeast cells recovery after cryopreservation. After one month of frozen storage the cryotolerance indexex ranked CASY (38.10%) > CAY (36.96%) > free yeasts (29.34%). The prolongation of storage to three months reduced the yeasts cryoresistence to CASY (28.57%) > CAY (25.36 %) > free yeasts (19.00%). Based on these results the effectiveness of the encapsulation in the protection of bakery yeasts during freezing and frozen storage is proven.

***Keywords*:** bakery yeast, cryoprotective, encapsulation, *Saccharomyces cerevisiae*



**P12**

## Safety aspects related to the Bisphenol A migration process in packed meat and milk products – a review

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Bisphenol A (BPA), a chemical compound found mainly in polycarbonate materials, can be used as an additive to obtain other materials such as epoxy, polyphenolic resins. Scientific studies have also shown its presence in packaging, in which, this compound has not been used as a raw material or additive, its presence being due to cross-contamination of materials used or cross-contamination during the recycling process. BPA under the action of certain factors (light, temperature, contact time, pH, type of product, type of food contact materials), can migrate from the packaging material to the packaged product in larger or smaller quantities. According to studies, the main source of BPA exposure is by ingesting food contaminated with this compound. Its presence has been detected in a wide range of foods such as meat and meat products, milk and dairy products, fruits and vegetables and products derived from them, fish and seafood, plain or carbonated water, juices, sauces etc. In addition to these sources, contamination can also occur from non-food sources, such as exposure to dust, air, especially those who work in factories to obtain plastics. According to studies, the adverse effects of this compound has been demonstrated, especially on the reproductive system. It has also been observed that it influences the development of other diseases of the circulatory system, nervous system, immune system, may contribute to the development of type 2 diabetes, etc.



In order to avoid exposure to BPA, certain measures are needed to avoid chronic exposure of consumers to this compound. Among these measures would be the replacement of this compound with another, less toxic, decreasing the shelf life of the product to avoid a long period of contact between the product and the packaging material, maintaining food in optimal light and temperature. The purpose of this review was to develop a study, based on the literature, on BPA levels in different types of products, focusing on meat and milk and products derived from them.

***Keywords***: bisphenol A, contamination, food product, packaging



**P13**

# Effect of Mixing Coffee with Some Therapeutic Potential Plants on Some Quality Indicators of the End Product: A Case Study

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The paper proposes a new direction of preparing the coffee „*dark roast*" [originating from the Asia-Pacific (marine-like granulation)], mixed with condiment/aromatic plants (***thyme***, ***mint***, ***lavender***). Method of preparation: *French press* – patented by Italian designers *Attilio Calimani* and *Giulio Moneta* in ***1929*** [14]. The recipe was adapted, by integrating aromatic plants: ***18 g*** of coffee; ***2 g*** of aromatic plant; ***330 mL*** water, t°C ≈***100***; infusion time of ***5 minutes***. The products obtained were ***physical-chemical***: *polyphenols* [maximum coffee „*dark roast*" (***101.68 µg/mL***), minimum with mint (***90.18µg/mL***)]; *pH* [minimum (***5.64***), coffee „dark roast", maximum (***5.82***), with lavender]; grade *Brix* [maximum with thyme (***0.8%***)], *free acidity* [maximum coffee „dark roast" (***0.14 mg NaOH/g***), minimum with thyme (***0.06 mg NaOH/g***)] and sensory support with the help of 15 respondents. From a sensory point of view, the mint infusion is ranked 1st (***17.6*** points), even if the physical-chemical analysis classifies it as average. It can be argued that for the introduction of new products or product improvement it is recommended to study in detail the raw materials, the auxiliary raw materials, the influence induced by the operations performed (special thermal and mass transfer), on the cultivation-harvest processing- compared to sensory analysis.

***Keywords*:** coffee, dark roast, aromatic/spicy plants, French press, quality indicators, sensory analysis.



**P14**

## Freeze-drying and food matrix architecture

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*Freeze-drying* is one of the complex *unit operations* in food processing (heat and mass transfer), although the technique dates back several centuries (the Inca peoples of the Peruvian Andes). Mainly, *lyophilization* describes dehydration of water from frozen product with the intervention of vacuum. The operation presents some constraints generated by: **(1)** the nature/complex structure of the food matrix; **(2)** structural and psycho-chemical changes induced during processing, **(3)** correlation with appropriate control techiques; **(4)** the absence of real models and simulations of the phenomenon. It is known that physical changes induced by the food during lyophilization are conditioned by the matrix (microstructure) of the product. Studies describe lyophilization as a three-step process: **(1)** freezing ***[-40÷(-)60ºC***]; **(2)** sublimation (1÷0.1 mmHg, ***-20÷(-)25ºC***); **(3)** desorption (***$10^{-2}$÷$10^{-3}$ mm Hg***, ***20÷65ºC***). If water is the solvent, technically, lyophilization can be performed at a pressure of ***4.58 mmHg*** and ***0ºC***. On the other hand, the presence of cellular *hydratation water* in the food matrix decreases the crystallization temperature below ***0ºC***, conditioned by geometry, thickness of *hydration layer* and the entropy of the system. Although it is difficult to remove hydrating water and replace it with vaccum , is it easy to replace it with another molecular lawyer.



Under these conditions, the difficulties that may arise in the case of complete dehydration cannot be anticipated. The water present in the form of a narrow and viscous coating is difficult to remove, even if the attractive forces of the hydrophilic surface are moderate.

The phenomenon is determined by the „*strong*" dependence between viscosity, freezing temperature and *glass transition* temperature.

***Keywords***: freeze-drying, dehydration, lyophilization, food matrix, hydrating water.



**P15**

# Nutritional and sensory evaluation of gluten-free cake obtained from mixtures of rice flour, almond flour and arrowroot flour

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The main purpose of this study was the development and sensory and chemical evaluation of an assortment of gluten-free cake, specially designed for people with celiac disease or diabetes, made of rice flour, almond flour and arrowroot flour. Three cake samples from rice flour, almond flour and arrowroot flour were prepared, added in different proportions (80:10:10%, 60:20:20%, 40:30:30%), mixed with other ingredients and compared with control sample (100:0:0%). Standard procedures were used to estimate the proximate composition of flours and cake samples obtained in this study. The results obtained regarding the chemical composition of the studied cake samples show the superior nutritional profile of all three cake samples (CM1, CM2 and CM3) compared to CC. Following the sensory evaluation of this range of cakes, we can recommend the use of mixture: 60% rice flour: 20% almond flour: 20% arrowroot flour.

***Keywords:*** gluten-free cake, almond flour, arrowroot flour, sensory evaluation, nutritional quality



**P16**

## Obtaining and characterizing Tokaj liqueur wine

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Tokaj is a historic wine region, where wine has been produced for 450 years Tokaj liqueur (Tokaji aszú) famous worldwide, known as "the king of wines, nectar.

The Tokay region is known for its sweet wines made from grapes affected by a noble rot, botrytis cinerea, which absorbs water from the grape must while spreading new aromas of honey and apricot for the future wine.

In this wine-growing region, located on the north-eastern part of Hungary, a leaf was found fossilized by an ancient vine species, considered the original variety, common to all varieties existing today. So it can be said, that the vine is really indigenous and natural to Tokaj. This is due to the exceptional microclimate, the soil created by volcanic activities and fastin volcanic, favorable position of the hills and autumn mists rising from the rivers Bodrog and Yew, and the fermentation of the wine is helped by a special mold that covers the walls of the cellars. six varieties of grapes are used to produce Tokaj wine: Furmint, Harslevelu (Lindenblattriger in Germany or Feuille de Tilleul in France), Muscat Muscat (Sargamuskotaly), Zeta (obtained from the cross between Furmint and Bouvier), Koverszolo and Kabar. The most known wines from this region are Szamorodni and Aszu. The production technology of these wines is traditional.



**Factors that ensure the quality of wines in the Tokaj area**

1. It is a closed area, and the origin of the grapes from which they are produced is strictly ensured wine;
2. Only the best quality materials are used (both in terms of grapes
1. use, but also of different substances);
2. The processing is performed with modern machines and equipment;
3. Modernized processing technology;
4. Use of traditional production technologies;
5. Employees who have studies in the field;
6. Carrying out several laboratory analyzes regarding the quality of wines;
7. Introduction of research results in the production process;
8. Study of market requirements and consumer needs;
9. Experience gained over several centuries.

Wines are characterized from a chemical, organoleptic and microbiological point of view throughout their evolution in order to know, preserve and amplify their qualities through optimal care and conditioning.

**The chemical analysis** applied to wines aims at knowing their chemical composition (complete analysis) or of some important chemical and physico-chemical indices for directing the evolution of the wine and the quality of the product (summary analysis).

The summary or current analysis includes the determination of the following characteristics or indices:

- density;
- alcohol concentration;
- sugar content;
- total acidity;
- pH;
- volatile acidity;



- content in the extract;
- ash content;
- total and free $SO_2$ content.

**The sensory analysis** of wines is of particular importance for their characterization. The organoleptic indices (color, clarity, smell and taste) must correspond to the type, assortment and age of the wine.

Tasting as a method of appreciating wines requires a habit, a special education of the senses that is achieved through repeated exercises, done by established tasters, who know exactly what the relationship is, the relationship between the sensations offered by wine and the words used to express them. and which draw attention to these characters. Tasting is therefore not an easy operation, on the contrary it subjects the taster to great and unforeseen difficulties.

**The microbiological analysis** determines the nature, the number of microorganisms in the must and wine and the microbiological stability, imposes measures of inhibition or total elimination of the microorganisms.

For the complete and precise characterization of the wine there is always the need to correlate the physico-chemical, organoleptic and microbiological indices.

***Keywords***: Tokaj, liqueur, wine, chemical analysis, sensory analysis, microbiological analysis



**P17**

## Appetizer cakes - obtaining and evaluating the protective quality

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The main purpose of this paper is to obtain two variants of appetizer cake, without added sugar and fat: one with red beet and carrots and the second with mushrooms and broccoli, with the following as common base: white flour, eggs, yogurt, sheep cheese, green olives, baking powder, salt and pepper. The two innovative products obtained were analyzed in terms of proximate compozition and energy value, finding that, although they are pastry products, have a low calorie intake, are low in fat and sugars, being recommended to people with restrictions in terms of consumption of high-calorie foods, sugar and/or fats. Due to the richness of vegetables in the composition of the two finished products obtained, all particularly concentrated in active principles with protective properties on the human body, such as: polyphenols, essential amino acids, vitamins, minerals, natural pigments, etc., but also because they do not contain added sugar, added fats, we can say that the appetizer cakes with vegetables from this project are healthy, protective, very tasty and attractive looking food, which can be consumed by both children and adults of all ages.

***Keywords***: appetizer cake, red beet, broccoli, polyphenols, antioxidant activity.



P18

## Taurine and Caffeine Simultaneous Determination in Energy Drinks

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Energy drinks contain, in addition to a high dose of caffeine, taurine and glucuronolactone. Taurine, a non-essential amino acid involved in many metabolic actions of the body, is found in these drinks at levels 10 times higher than in other food products. Its effects on the body at these levels and in the presence of caffeine and glucuronolactone are not well known. In this context, a need has developed for specific, robust, inexpensive and simple to implement methods for simultaneously dosing methylxanthines and taurine and ensuring quality control of the various solid or liquid nutritional supplements marketed.

We present the optimization of a rapid, inexpensive, reliable and selective isocratic high performance liquid chromatographic (HPLC) method for the simultaneous determination of caffeine and taurine in energy drinks with two common detectors in series: evaporating light scattering detector (ELSD) and an ultraviolet (UV) detector. Satisfactory analysis results were obtained on an Astec apHera $NH_2$ column using methanol/water (30: 70 v/v) as mobile phase.

The optimized method was used for the analysis of commercial energy drinks containing large amounts of carbohydrates (100 $g \cdot L^{-1}$) and considerably lower amounts of taurine and caffeine (4 and 0.6 $g \cdot L^{-1}$, respectively).



The determination does not require any preliminary treatment of the samples except dilution and only basic LC instrumentation is necessary for this procedure.

***Keywords***: taurine, energy drinks, caffeine, HPLC, ELSD, UV



**P19**

## Characterization of high protein raw truffles

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The aim of this study was to prepare and analyze the physico-chemical and nutritional properties of some functional products with high nutritional value and rich in protein, namely raw protein truffles. These truffles contain only natural ingredients (dates, hemp seeds, chia seeds, cocoa butter, carob powder), thermally or chemically unprocessed. They are naturally sweet, because of dates, are rich in vitamins, minerals, antioxidants, fibers, proteins, essential fatty acids. They do not contain colours, preservatives, emulsifiers, stabilisers, thickeners, and sweeteners. All these qualities make truffles a superfood.

Analyzes were performed on each ingredient and implicit on the finished product in order to find out the nutritional value of a functional product made from super ingredients and to show how this product can improve the performance and quality of the consumer's life.

***Keywords*:** high nutritional value, raw hyperprotein truffles, healthy diet, superfoods.



**P20**

## Innovative raw-vegan chia dessert - total polyphenols, ascorbic acid and antioxidant activity analysis

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The aim of this research work was to obtain two innovative assortments of raw vegan chia pudding and to analyze their antioxidant activity (CUPRAC method), their total polyphenols (Folin-Ciocalteu assay) and vitamin C content (iodometric method), compared to raw materials. The two varieties of chia pudding had as a common base chia seeds, vegan coconut milk, and honey. One of the assortments (P1) had as additions dried goji berries, candied cranberries and carob powder, and the second (P2): coconut flakes, brown raisins, almonds, cashews and hazelnuts. Regarding the raw materials used, the highest content of total polyphenols and vitamin C was found in dried goji berries (28.27 ± 1.88 mg gallic acid/g, respectively 490.23 ± 5.21 mg ascorbic acid/100g): they also showed the strongest antioxidant activity (235.82±4.08 mg Trolox/g). For the finished products, the highest content of total polyphenols and vitamin C was recorded in the P1 assortment of chia pudding (8.24±0.82 mg gallic acid/g, respectively 52.16±2.24 mg ascorbic acid/100g) which also showed the best antioxidant activity (69.52±2.08 mg Trolox/g), more than twice as large as the P2 assortment (32.41±1.82 mg Trolox/g).

***Keywords***: chia, raw-vegan dessert, ascorbic acid, antioxidant activity, polyphenols



P21

## Development and characterization of an innovative prototype of pork sausage

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The purpose of this study was to develop a new recipe to obtain a special innovative pork sausage, to develop the manufacturing process, technological stages, and nutritional analysis of the final product. We obtained this product starting from a classic recipe (of pork sausage), it was added blueberry fruit. Blueberries are fruits with a high content of antioxidants. The addition of antioxidants to meat products is done to prevent lipid oxidation, delay the development of off- flavours and improve colour stability.

The main features observed in the sample of sausage (simple sausage and sausages prepared with added blueberries) were: protein (%), fat (%), carbohydrates (%) and energetic value (kcal/100g).

Following the research that have been undertaken in this work, the obtained product (sausages with fruit) can be included in the category of secure products of consuming.

From an organoleptic point of view, these sausages were in line with the rules previously established.

This work demonstrate that this prototype can be considered a food variant due to its high nutritious properties and to its distinguished taste too.

***Keywords**:* sausages, blueberry, pork, nutritional characteristics



**P22**

## Determination of proximate composition for some dark chocolate types

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The purpose of this paper is to determine the proximate composition of some types of dark chocolate with different cocoa mass contents (between 60 - 85%). Carbohydrates, proteins, fats, minerals and moisture concentration were determined from samples represented by three brands of imported dark chocolate with 60-85% dry cocoa mass, commercialized in hypermarkets of Timisoara. The obtained results show that the analyzed chocolate samples contain important quantities of nutrients, depending on the type of chocolate and analyzed nutritional parameter: 1.24 - 1.36 % moisture; 1.58- 2.11 % minerals; 40.12 – 45.81 % fats; 6.31 - 11.33 % protein and 20.45 – 43.52 % carbohydrates.

In order to highlight the difference between nutritional properties of the dark chocolate in comparison with milk chocolate, a milk chocolate sample was analyzed.

It can be seen that an increase in the mass content of cocoa, leads to a decrease in the concentrations of proteins, fats and even moisture and a decrease in the carbohydrate content. Increasing the cocoa content and decreasing the lipid content of dark chocolate contributes to accentuating the beneficial effects on the body's health.

***Key words:*** dark chocolate, proximate composition, beneficial effects



P23

## Comparative study concerning the use of tomato juice added to food products of animal origin

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In the food processing industry, tomato is a basic vegetable ingredient, widely used in many products such as juices, soups, sauces and ketchups. Increasing market demand for fast food products often served with many tomato sauces has encouraged tomato processing industry. A widely product used in all countries due to its nutritional, stimulating qualities is given by bolognese sauce.

The purpose of this paper was to carry out a study on the nutritional and sensorial values for some varieties of Bolognese sauces commercialized in Timisoara supermarkets, compared with two tomato sauces: sauces with meat (mixture of beef and pork) and sauces with vegetables, prepared according to the own recipe. Bolognese sauce (Ragu) is a culinary dish dating back to the 18th century, originating in northern Italy, in the Bologna city, as it is also called. In Bologna, the sauce requires a thin beef fillet, combined with pancetta, butter, onion and carrot.

The following parameters were highlighted: energy value, total fat content, carbohydrates, proteins, dietary fiber. Also, the sensory analysis of the two varieties of sauces experimentally obtained, was performed. Nutritional values of commercialized sauces, used in this study were taken from the labels mentioned by the companies producing of these assortments.



The nutritional values of the experimentally obtained sauces were calculated using the nutritional values of each ingredient that is part of them, taken from the Frida fooddata.dk database. Due to its beneficial properties, giving many nutrients, Bolognese sauces are part of the class foods recommended to be consumed by people of all ages. In human nutrition, is required because it has a high relative nutritional and sensorial values, a pleasant taste and aroma.

***Keywords***: tomato juice, varieties of Bolognese sauces, nutritional values



P24

# Food and economic importance of tapioca roots

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Tapioca has become a multipurpose crop that responds to the priorities of developing countries, to trends in the global economy and to the challenge of climate change. Tapioca (cassava) is the most important tropical root crop, originally from Amazonia. Its starchy root is a major source of dietary energy and provides the staple food of an estimated 800 million people worl-wide. It is known to be the highest producer of carbohydrates among staple crops. According to United Nations Food and Agriculture Organization (FAO), tapioca ranks fourth of food crops in developing countries after rice, maize and wheat. Grown almost exclusively by low-income, smallholder farmers, it is one of the few staple crops that can be produced efficiently on a small scale, without the need for mechanization or purchased inputs, and in marginal areas with poor soils and unpredictable rainfall. The edible leaves are relatively rich in protein. Tapioca can be stored in the ground for several seasons, and thereby serve as a reserve food when other crops fail. Tapioca is also increasingly used for animal feed and in different industrial processes and products. A problem with tapioca is the poisonous cyanides which have to be disarmed before consumption.

***Keywords***: tomato juice, varieties of Bolognese sauces, nutritional values



P25

## Characterisation of *Carum carvi* L. Esential Oil and its Activity against Food Poisoning Pathogens

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The aim of this study was to investigate the chemical composition the antimicrobial activity of esential oils extracted from caraway seeds and mode of action of principal compound, linalool, on survival of *Escherichia coli* and *Staphylococcus aureus* strains. The caraway essential oil was obtained by hydrodistillation for 3 h using a Clevenger type apparatus The chemical composition of the oil was analyzed by GC-MS. MIC values of essential oil and linalool against the two pathogenic strains were estimated by standard EUCAST DEF.3.1 method. MBC was determined by calculating the relative proportion of live and dead bacteria by means of a fluorescence assay. The concentration of free potassium ions in bacterial suspension after exposure to the essential oil for 0, 30, 45, 60 minute was measured by a photometric procedure using the Potassium test kit Quantofix®.The measure of the release of 260-nm-absorbing material from the tested food-borne pathogenic bacteria cells was determined in a JASCO UV/VIS spectrophotometer. The hydrodistillation of the caraway seeds yielded pale yellow colored oil (yield: 3.46% w/w). 25 compounds representing 90.50% of the total oil were identified. The GC-MS analysis also indicated that linalool represents the highest amount of the essential oil (33%). The *caraway* essential oil and linalool showed potent inhibitory effect against S.aureus/ *E. coli* as MIC values were 110/175 µg/mL; 180/220 µg/mL). The release of $K^+$ from the bacterial cells occurred immediately after the addition of *linalool* at MIC.



Potassium ion efflux of S.aureus was higher than *E. coli*. After 45 min of treatment, more than 2.5-fold increase was observed in the optical density of the S. aureus bacterial cell culture filtrate treated with essential oil.

The results of this study indicate that the caraway essential oil and its principal constituent are able to disrupt membrane functions of tested food-borne pathogens.

***Keywords***: *Carum carvi* L., esential oil, food, pathogens



P26

# Whole barley (*Hordeum vulgare* L.) culinary application and health implications

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Cereals are becoming more and more popular among Romanian consumers, especially for children. Cereal based products are obtained from various ingredients through boiling, drying and aeration processes, respectively heat treatments. For example, cereal flakes are consumed especially at breakfast due to the important caloric and nutritional intake: carbohydrates (approximately 75%), proteins (6-15%) and even lipids, whose concentration varies widely depending on the type of cereals (from at 1-3% in barley at 5-10% in corn and barley, relative to dry mass). In addition, they have a high fiber content (11.5% in wheat and much more, 37.7% in barley). On the other hand, they also make a significant contribution through the presence of minerals, vitamins from the B vitamins group or antioxidant vitamins.

Lipids are found in relatively low concentrations in cereals, but are of significant importance in terms of the final bakery product. Lipids are mainly found in cereal germs, which also serve as oil suppliers. The composition of lipids does not differ significantly, but it can be seen that linoleic acid is predominant in all cereals



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***Keywords***: barley (*Hordeum vulgare* L.), lipids, culinary application and health implications



P27

# Bread from traditional product to molecular gastronomy

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The production and consumption of bread have been known since prehistoric times, the raw materials used being among the most varied (wheat, rye, barley, oats, corn, rice, millet). Evidence of the manufacture of bread has been found as early as thirty thousand years ago in Europe, and from about 10,000 BC. (Neolithic era) Bread became one of the main sources of food.

The modernist bread between art and science is a revolutionary new understanding of one of the most important foods in the human diet. The first published book on modernist cuisine "*The Art and Science of Cooking*", it explains practical knowledge and innovative techniques in the preparation of bread from ancient times to the present.

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***Keywords***: bread, traditional product, molecular gastronomy



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## Pasta - from traditional product to molecular gastronomy

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The specific consumption of traditional pasta in Romania is about 2-2.5 kg / inhabitant per year; the specific consumption of pasta in the main countries of Western Europe, except Italy, is between 7-9 kg / inhabitant and year; the specific consumption of pasta in Italy is about 27 kg / inhabitant per year. In Romania, there are significant differences between the specific consumption of pasta in the intra-Carpathian and extra-Carpathian areas, which can be explained by the fact that following the historical evolution, the former had wider connections with the civilization of Western Europe. This explains the phenomenon of continuous increase in the specific consumption of pasta in our country, in Europe and even around the world. Also, the frequency of consuming pasta in Romanian is 47% who consume 2 times / week, 25% who consume 3-4 times / week, and 5% never consume pasta.

The concept of molecular gastronomy was probably "predicted" by Marie-Antoine Carême, one of the most famous French chefs, who said in the early nineteenth century that when you make “meat broth should boil very slowly, otherwise albumin coagulates, hardens; water, not having time to penetrate the flesh, preventing osmosis”. The molecular gastronomy concept is discussed in terms of pasta products.



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***Keywords***: pasta, traditional, molecular gastronomy



P29

Legislative aspects on food security

**Claudia Izabela Oprinescu, Anca Morega, Adelina Pop, Celilia Ulici, Alina Tiron, Marius Ioan Cugerean, Răzvan Drăghici, Nicoleta Gabriela Hădărugă*, Adrian Riviş**

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Food security is one of the most pressing and urgent issues in developed and transition countries. As a definition, "security is a concept of strategic and integrated approach that includes legal aspects and regulations (including tools and activities) on the analysis and management of risk to human, animal and plant life and health and the association of this risk with the environment".

Government authorities at the national and sub-national levels are involved in food security. These are competent authorities responsible for various security-related sectors: food, safety, public health, agriculture, forestry sector, fisheries sector, environment protection. Legislative aspects at national and European levels are emphasized in this presentation.

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***Keywords***: food security, government authorities, legislative.



P30

## Authenticity of fruits in terms of geographical origin

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The quality control of food products in general, and of those of vegetal origin in particular, supposes the establishment of the quality / authenticity of the product, respectively the framing between certain limits for their different physico-chemical parameters.

In order to define a product as authentic, it must have a name that implies a legal set of features that can remove any confusion when placed on the market. Thus, food placed on the market must comply with certain basic principles, namely: definitions of FAO / WHO, Codex Alimentarius (FAO - Food and Agriculture, Organization; WHO - World Health Organization); the laws and regulations of the Member States of the European Union; the composition or method of manufacture of the products; references to any Community acts.

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***Keywords***: authenticity, fruits, geographical origin



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