University of Agronomic Sciences
and Veterinary Medicine of Bucharest

Faculty of Biotechnology

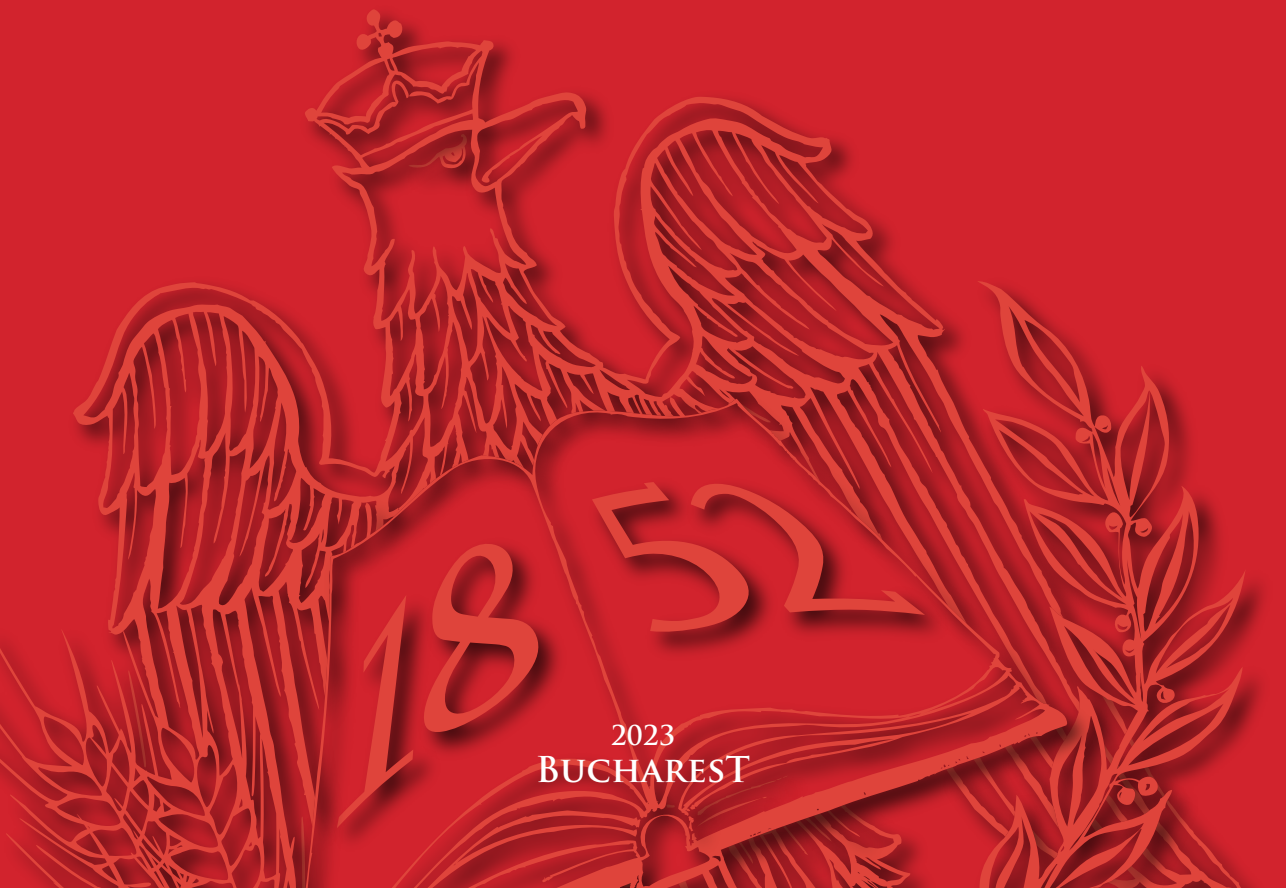
International Conference

"Agriculture for Life, Life for Agriculture"

BOOK OF ABSTRACTS

Section 6

BIOTECHNOLOGY



2023
Bucharest

University of Agronomic Sciences
and Veterinary Medicine of Bucharest

Faculty of Biotechnology

International Conference
"Agriculture for Life, Life for Agriculture"

Book of abstracts

Section 6

Biotechnology

2023
Bucharest

PUBLISHERS:

University of Agronomic Sciences and Veterinary Medicine of Bucharest, Faculty of Biotechnology, Romania
Address: 59 Mărăști Blvd, District 1, Zip code 011464, Bucharest, Romania,
Phone: + 40 21 318 25 64, Fax: +40 21 318 28 88,
E-mail: biotechnologiesjournal@usamv.ro
Webpage: http://biotechnologyjournal.usamv.ro

CERES Publishing House
Address: 29 Oastei Street, District l, Bucharest, Romania
Phone: + 40 21 317 90 23, E-mail: edituraceres@yahoo.com,
Webpage: www.editura-ceres.ro

To be cited: Book of Abstracts, International Conference "Agriculture for Life, Life for Agriculture", Section 6: Biotechnology, 2023

ISSN 2343-9653 (PRINT)
ISSN-L 2343-9653

SCIENTIFIC BOARD - SECTION 6: BIOTECHNOLOGY

- Veronika ABRAM - Biotechnical Faculty, University of Ljubljana, Slovenia
- Narcisa BĂBEANU - Faculty of Biotechnology, USAMV of Bucharest, Romania
- Gabriela BAHRIM - Faculty of Food Science and Engineering, "Dunărea de Jos" University of Galați, Romania
- Gustavo V. BARBOSA-CANOVAS - Washington State University Pullman, State of Washington, USA
- Ingrid BAUMAN - Faculty of Food Technology and Biotechnology, Zagreb, Croația
- Nastasia BELC - Faculty of Biotechnology, USAMV of Bucharest, Romania
- Daniela BORDA - Faculty of Food Science and Engineering, "Dunărea de Jos" University of Galați, Romania
- Monica BOSCAIU - Mediterranean Agroforestry Institute (IAM, UPV), Universitat Politècnica de València, Spain
- Dorica BOTĂU - Faculty of Agriculture, USV from Timișoara, Romania
- Nicolae CORCIONIVOSCHI - Agri-Food and Biosciences Institute, Belfast, United Kingdom
- Călina Petruţa CORNEA - Faculty of Biotechnology, USAMV of Bucharest, Romania
- Delia DIMITRIU - Manchester Metropolitan University, United Kingdom
- Carla EMILIANI - Università degli Studi di Perugia, Italy
- Helmut GLATTES - ISEKI Food Association, Austria
- Gustavo Fidel GUTIERREZ-LOPEZ - ENCB-IPN, National School of Biological Sciences, National Polytechnic Institute, Mexico
- Florentina ISRAEL-ROMING - Faculty of Biotechnology, USAMV of Bucharest, Romania
- Huub LELIEVELD - GHI Association Netherlands and EFFoST Executive Committee, Netherlands
- Leonardo LEONARDI - Università degli Studi di Perugia, Italy
- Florentina MATEI - Faculty of Biotechnology, USAMV of Bucharest, Romania
- Amalia Carmen MITELUŢ - Faculty of Biotechnology, USAMV of Bucharest, Romania
- Paola PITTIA - Dipartimento di Scienze, degli Alimenti University degli Studi di Teramo, Italy
- Mona Elena POPA - Faculty of Biotechnology, USAMV of Bucharest, Romania
- Sandrine ROUSSEAUX - University of Burgundy, Dijon, France
- Mark SHAMTSYAN - St. Petersburg State Institute of Technology, Russia

- Cristina SILVA - ISEKI Food, Catholic University of Portugal
- Ileana STOICA - University of Bucharest, Romania
- Gabriela TENEA - Universidad Técnica del Norte, Ibarra, Ecuador
- Margarida VIEIRA - Directora do Dep. De Engenharia Alimentar, Instituto Superior de Engenharia, Universidade do Algarve, Portugal
- Tatiana VASSU - University of Bucharest, Romania
- Oscar VICENTE - Universitat Politècnica de València, Spain
- Medana ZAMFIR - Institute of Biology, Romanian Academy, Romania
- Chin-Kun WANG - Chung Shan Medical University, Taiwan

ORGANIZING COMMITTEE - SECTION 6: BIOTECHNOLOGY

Section president: Professor PhD. Călina Petruța CORNEA
Section coordinator: Professor PhD. Florentina MATEI

Members:

- Professor PhD. Florentina ISRAEL-ROMING
- Lecturer PhD. Elisabeta Elena POPA
- Lecturer PhD. Radu Cristian TOMA
- Lecturer PhD. Gabriela MĂRGĂRIT
- Lecturer PhD. Diana GROPOȘILĂ-CONSTANTINESCU
- Lecturer PhD. Oana LIVADARIU
- Lecturer PhD. Gabriela POPA
- Lecturer PhD. Mihaela GEICU-CRISTEA
- Asist. PhD. Paul Alexandru POPESCU

SUMMARY

ORAL PRESENTATIONS

SUBSECTION I: AGRICULTURAL BIOTECHNOLOGY

POSTER PRESENTATIONS

SUBSECTION I: AGRICULTURAL BIOTECHNOLOGY

SUBSECTION II: FOOD BIOTECHNOLOGY

SUBSECTION III: MEDICAL AND PHARMACEUTICAL BIOTECHNOLOGY

SUBSECTION IV: ENVIRONMENTAL BIOTECHNOLOGY

SUBSECTION V: MISCELLANEOUS

ORAL PRESENTATIONS

O.1. THERAPEUTIC POTENTIAL OF FUNCTIONAL PRODUCT BASED ON WILD EDIBLE MUSHROOMS

Emanuel VAMANU[1], Mihai Ioan POP[2], Iulia Octavia POP[2], Shailendra Kumar MISHRA[3], Sandeep Kumar SINGH[3]

[1]University of Agronomic Sciences and Veterinary Medicine of Bucharest, 59 Mărăşti Blvd, District 1, Bucharest, Romania
[2]SC Hypericum Impex SRL, 3A Gutinului Street, Baia Sprie, Maramures County, Romania
[3]Indian Scientific Education & Technology Foundation, Lucknow, Uttar Pradesh, 226002, India

Corresponding author email: email@emanuelvamanu.ro

Abstract

Food supplements have proven their effectiveness through the support offered to administer certain drugs and their ability to determine the prevention of degenerative diseases. The correlation of assay methods with individual-level observations is essential in understanding the effect of biopharmaceuticals as a useful tool for long-term homeostasis preservation. This paper aimed to present essential aspects related to using wild edible mushrooms as functional supplements in type 2 diabetes and associated cardiovascular diseases. The product RoBioMush was presented as a result of the scientific data applied within the university, and the effects recorded after the administration of the product to the target groups were highlighted. Thus, the administration of RoBioMush had as its main effect the regulation of intestinal transit, a fact demonstrated by the researched modulation process previously in an in vitro study.

Key words*: microbiota, pattern, chronic pathologies, modulation.*

O.2. CONTROL OF K^+ HOMEOSTASIS: AN ESSENTIAL STRESS TOLERANCE MECHANISM IN PLANTS

Oscar VICENTE[1], Mohamad AL HASSAN[2], Monica BOSCAIU[1], Sara GONZÁLEZ-ORENGA[1, 3]

[1]Universitat Politècnica de València, Camino de Vera s/n, 46022, Valencia, Spain
[2]Aeres University of Applied Sciences, 8251 JZ Dronten, Netherlands
[3]Universidad de Vigo, Campus Lagoas-Marcosende, 36310 Vigo, Spain

Corresponding author email: ovicente@upvnet.upv.es

Abstract

Soil salinity is one of the most critical environmental stressors that reduces crop yields worldwide and affects wild plants distribution in nature. Climate change is increasing the salinity of irrigated cropland and natural saline habitats of high ecological value, highlighting the interest in elucidating salt stress tolerance mechanisms in crops and wild plants. One of the well-known adverse effects of salt is the interference of toxic Na^+ ions with K^+ uptake and homeostasis, as both cations compete for the same binding sites and transport proteins. Therefore, an increase in substrate salinity is usually accompanied by a reduction of K^+ concentrations in the plant organs, as it has been observed in many species, both salt sensitive and tolerant. However, in other plants, K^+ contents are maintained or even increase with increasing Na^+ concentrations; for example, in some species, K^+ transport to the leaves is activated at high external salinity to counteract the toxic Na^+ effects. This review will present several examples of these mechanisms and their relevance for stress tolerance, based primarily on our group's work during the last 20 years.

Key words*: climate change; ion toxicity, potassium transport, soil salinity, salt tolerance.*

O.3. HOW GHI MAY BE SUCCESSFUL IN IMPROVING FOOD SECURITY AND SAFETY

Huub LELIEVELD

Global Harmonization Initiative (GHI), Florianigasse 63/14, Vienna, Austria

Corresponding author email: huub.lelieveld@globalharmonization.net

Abstract

GHI can be successful if GHI produces useful material that indeed reduce food safety incidents and improve food security. GHI does this without any influence of industries or governments: GHI is impartial, with 1400 scientists. No government is going to change regulations because of GHI. GHI must show that changes in regulations may be good. With about 20 working groups, GHI attempts to show how food safety and security can be improved by effectively addressing actual serious problems. Examples are: • A proposal for a legal requirement for food companies to employ a certified food safety professional (CP), without one the company cannot operate. The CP cannot be dismissed. • Cassava, kills 100,000`s because often prepared in the wrong way. GHI develops a training programme for people who cannot read. • GHI developed an anonymous whistleblowing webpage, in 40 languages. Even GHI cannot find out who reported a food safety incident. GHI alerts local food safety authorities of real and serious incidents.

Key words*: food security, food safety, cassava, whistleblowing, certified food safety professionals.*

O.4. PLANT SOMATIC EMBRYOGENESIS - A FOCUS ON THE ROLE OF CALCIUM IN EMBRYO INDUCTION AND DEVELOPMENT

Ricardo MIR, Antonio CALABUIG-SERNA, Jose María SEGUÍ-SIMARRO

Cell Biology Group - COMAV Institute, Universitat Politècnica de València, Camino de Vera s/n, 46022, València, Spain

Corresponding anthor email: rimimo@upv.es

Abstract

Upon fertilization, plants produce zygote-derived embryos that will develop into new individuals. The study of its regulation is important to overcome the post-zygotic barriers that may prevent hybridization, requiered for the development of new cultivars. The study of zygotic embryo development is challenging, since they are surrounded by a multilayer maternal tissue, and are difficult to reach. Alternatively, plants produce embryos from specific somatic cells under certain in vitro conditions. This process, referred to as somatic embryogenesis, has been established as a model to study plant embryogenesis, due to its similitudes with zygotic embryogenesis and its technical feasibility. Moreover, the production of somatic embryos allows to efficiently propagate plant material. Somatic embryogenesis is regulated by stimuli of different nature. Among others, calcium gradients within cells and tissues are important to achieve a proper consecution of embryogenesis from somatic cells. In this review, we summarize the most relevant advances in different plant species by using multiple approaches that shows the role of calcium in the regulation of somatic embryogenesis.

Key words*: somatic embryogenesis, calcium signalling, ionophore, FRET.*

O.5. AGROBIODIVERSITY: CONSERVATION, THREATS, CHALLENGES, AND STRATEGIES FOR THE 21ST CENTURY

Mario X. RUIZ-GONZÁLEZ[1], Oscar VICENTE[2]

[1]Institute for Conservation and Improvement of Valencian Agrodiversity, Universitat Politècnica de València, Camino de Vera s/n, 46022, Valencia, Spain
[2]Universitat Politècnica de València, Camino de Vera s/n, 46022, Valencia, Spain

Corresponding author email: maruigon@upvnet.upv.es

Abstract

The conservation of agrobiodiversity begins by its characterisation to know it. On this knowledge, we must study the interactions of the different species with their abiotic and biotic context. However, as a consequence of the effects of climate change, the abiotic context is variable and extreme. Therefore, abiotic stress induced by climate change jeopardises both the biodiversity and plant genetic resources, therefore, food security. The latter is more drastic in developing communities. Thus, given the predictions of the effects of climate change at different geographical levels, it is urgent to develop strategies that might improve the management of biodiversity and promote resilience against said effects. On the one hand, preserving and describing the agrobiodiversity allows us to identify the genetic material most appropriate under different abiotic contexts. On the other hand, plants, including crops, are not isolated species and develop in a very heterogeneous biotic context that can enhance plant tolerance to abiotic stress. In this work, we review key concepts, threats, challenges, and strategies to improve agrobiodiversity management.

Key words*: agrodiversity, climate change, conservation, abiotic stress, tolerance.*

O.6. INDUCTION OF TOMATO POLYPHENOL OXIDASES IN RESPONSE TO COMMON CUTWORM (*SPODOPTERA LITURA*) AND JACK BEARDSLEY MEALYBUG (*PSEUDOCOCCUS JACKBEARDSLEYI*) INFESTATIONS

Sulita KLAKANKHAI, Apinya KHAIRUM, Piyada Alisha TANTASAWAT

Suranaree University of Technology, 111 University Ave., Muang District, Nakhon Ratchasima, Thailand

Corresponding author email: piyada@sut.ac.th

Abstract

Our objectives were to evaluate the induction of polyphenol oxidases (PPOs) and expression patterns of PPO A, B, D, E, and F genes upon infestations by common cutworm (Spodoptera litura) and Jack Beardsley mealybug (Pseudococcus jackbeardsleyi). After common cutworm infestation at leaf node 4, PPO activities increased 10.2-fold locally, leading to systemic increase in PPO activities at upper leaf nodes 1-2 (3.0-fold) and lower leaf node 6 (1.7-fold). While infestation at leaf node 6 locally induced PPO activities 14.5-fold, and systemically induced PPO activities 3.0-fold at leaf node 4. By contrast, no significant induction of PPO was observed at any leaf nodes when either leaf node 4 or 6 was infested by mealybug. When common cutworm fed on PPO B::GUS fusion tomatoes, induced PPO B expression was observed locally particularly in mature leaves at veins, petioles, and abscission zones. However, PPO D::GUS fusion tomatoes showed locally induced expression especially in older leaves at veins and petioles. Systemically induced expression was also observed. Mealybug feeding also locally induced PPO B and PPO D expression in vascular tissues but at lower levels.

Key words*: differential expression, gene family, insect resistance, PPO, Solanum lycopersicum.*

O.7. POTATO JUICE AND PRODUCTS OF ITS PROCESSING: SYNERGY IN *IN VITRO* CYTOTOXICITY AGAINST CANCER CELLS OF DIGESTIVE SYSTEM

Przemysław Łukasz KOWALCZEWSKI[1], Anna OLEJNIK[2], Martyna Natalia WIECZOREK[1], Joanna ZEMBRZUSKA[3], Katarzyna KOWALSKA[2], Jacek LEWANDOWICZ[4], Grażyna LEWANDOWICZ[2]

[1]Department of Food Technology of Plant Origin, Poznań University of Life Sciences, 60-624 Poznań, Poland
[2]Department of Biotechnology and Food Microbiology, Poznań University of Life Sciences, 60-627 Poznań, Poland
[3]Institute of Chemistry and Technical Electrochemistry, Poznan University of Technology, 60-965 Poznań, Poland
[4]Institute of Logistics, Poznan University of Technology, 60-965 Poznań, Poland

Corresponding author email: przemyslaw.kowalczewski@up.poznan.pl

Abstract

More and more literature data indicate the health-promoting effect of potato juice (PJ). However, to date, it has not been precisely explained which of the many compounds present in PJ exhibit biological activity. The work aimed to establish the antiproliferative effect of gastrointestinal digested PJ and the products of its processing. Fresh PJs derived from three edible potato varieties, industrial side stream resulting from starch production, partially deproteinized PJ derived from feed protein production line, and three different potato protein preparations subjected to digestion in the artificial gastrointestinal tract were used in this study. The cytotoxic potential of glycoalkaloids (GAs), phenolic acids, digested PJ and products of PJ processing was determined in human normal and cancer cells derived from the digestive system. The results showed that GAs exhibit concentration-dependent cytotoxicity against all analyzed cell lines. In contrast, phenolic acids (caffeic, ferulic, and chlorogenic acid) do not show cytotoxicity in the applied cell lines. A correlation between cytotoxic potency and GAs content were found in all PJ products studied. The most potent effects were observed under treatment with deproteinized PJ, a product of industrial processing of PJ, distinguished by the highest effective activity among the fresh juice products studied. Moreover, this preparation revealed a favorable cytotoxicity ratio towards cancer cells compared to normal cells. Statistical analysis of the obtained results showed the synergistic effect of other bioactive substances contained in PJ and its products, which may be crucial in further research on the possibility of using PJ as a source of compounds of therapeutic importance.
The National Centre for Research and Development of Poland (NCBR) is acknowledged for funding provided within the programme LIDER under grant agreement No. LIDER/27/0105/L-11/19/NCBR/2020 (PI: Przemysław Kowalczewski).

***Key words**: solanine, chaconine; phenolic acids, biological activity, Solanum tuberosum.*

O.8. MULTIDRUG-RESISTANT BACTERIA LINKED TO ECUADORIAN CHEAP MARKETS FRESH STRAWBERRIES AND GOOSEBERRIES

Gabriela Nicoleta TENEA, Pamela REYES, Diana MOLINA

Technical University of the North, 17 de Julio Avenue, Ibarra, Ecuador

Corresponding author email: gntenea@utn.edu.ec

Abstract

From a safety standpoint, the microorganisms concealed in the fresh fruits sold in low-cost markets are of concern since they may carry several genes associated with multidrug resistance (MDR). To assess the microbiological quality and safety of highly consumed fruits in Ecuador, ready-to-eat strawberries and gooseberries purchased from a local fruit grower and low-cost market were tested. The results indicated the low microbial quality of the fruits purchased from the local retailers as several indicators consisting of total coliforms (>3 log CFU/g), total aerobes (>2.3 log CFU/g), Enterobacter spp., Shigella spp., yeasts, and molds were detected. Staphylococcus spp. was found in both fruits regardless of origin, while Escherichia coli isolates were found in strawberries but not gooseberries. Testing for antibiotic susceptibility revealed that several isolates were multidrug resistant. Beta hemolysis was found in 88.89% and 61.11% of E. coli and Enterobacter isolates, respectively. All Staphylococcus were beta-hemolytic. A plasmid curing assay of MDR isolates revealed that antibiotic resistance was significantly predictive of plasmid origin. To prevent the exposure of products to MDR bacteria, adequate agronomic, storage conditions and manipulation methods are required.

Key words*: multidrug resistance bacteria, fresh agriculture products, strawberries, gooseberries, retail markets, Staphylococcus.*

O.9. NEW ANTIMICROBIAL PEPTIDES WITH POTENTIAL APPLICATIONS IN BIOTECHNOLOGY

Dana COPOLOVICI, Dana Gina RADU, Cristian MOISA, Andreea Ioana LUPITU, Lucian COPOLOVICI

Aurel Vlaicu University, 2 Elena Dragoi Street, Arad, Romania

Corresponding author email: dana.copolovici@uav.ro

Abstract

Due to the modern way of life and longer life expectancy, people need to be treated for bacterial and viral infections, among other things (Copolovici et al., 2014; Copolovici and Lupitu, 2018). Antimicrobial peptides are peptides that can kill microorganisms. Six peptides were synthesized using solid-phase peptide synthesis with labile fluorenylmethyloxycarbonyl group strategy. These were analyzed by MALDI-TOF-MS and their purity was assessed by analytical HPLC. The antimicrobial activity of the six new peptides obtained was determined by calculating the minimum inhibitory concentration (MIC). The broth microdilution method was used to determine the MIC of the peptides, in two bacteria (Staphylococcus aureus and Klebsiella pneumoniae (Wiegand et al., 2008). All peptides were efficient against the tested bacteria. To speed up the development of peptide-based drug systems, it is important to design peptides that can break through the cell membrane or cross biological barriers, stay in circulation longer, and are not toxic or immunogenic to humans. Acknowledgments: This work was supported by a grant of the Ministry of Research, Innovation and Digitization, CNCS - UEFISCDI, project number PN-III-P4-PCE-2021-0639, within PNCDI III.

Key words*: antimicrobial peptides, antimicrobial activity, biotechnology, peptide synthesis.*

O.10. PRODUCTION OF PROTEIN HYDROLYSATES FROM SUSTAINABLE BIOMASSES USING POLYLACTIC ACID CONTINUOUS FLOW BIOREACTORS WITH IMMOBILIZED ENZYMES

Eleonora CALZONI, Nicolò MONTEGIOVE, Alessio CESARETTI, Carla EMILIANI, Leonardo LEONARDI, Roberto Maria PELLEGRINO

University of Perugia, via del Giochetto, Perugia, Italy

Corresponding author email: eleonora.calzoni@unipg.it

Abstract

In recent decades, the world population has grown exponentially along with the food demand. This inevitably requires an expansion of agriculture and productivity growth, which will put pressure on natural resources by increasing deforestation, greenhouse gas (GHG) emissions, and water consumption, thus contributing to global ecological overshoot and climate change. Considering the foregoing, food production needs to change to ensure the sustainable exploitation of natural resources. Following these considerations, the present work aimed to produce Protein Hydrolysates recovering the protein component from biomasses with a low environmental impact as agricultural waste biomasses and insects, to be used as an alternative protein source for human and animal nutrition and the production of agricultural biostimulants. Innovative hydrolysis processes based on a patented technology (Italian Patent No. 102019000025012), consisting of proteolytic enzymes covalently immobilized on three-dimensional polymeric supports were used. The production of PHs through enzymatic catalysis created a low environmental impact process, and also raised the quality of the product, thanks to the reproducible formation of low-molecular-weight peptides exhibiting interesting and often unexplored biological activities.

Key words*: immobilized enzymes, bioreactor, polylactic acid, waste biomasses, protein hydrolysates, recovery, circular economy, ingredients, biostimulants.*

O.11. TRENDS IN QuEChERS-BASED SAMPLE PRETREATMENT METHODS FOR POLYCYCLIC AROMATIC HYDROCARBONS ANALYSIS IN FOOD

Laurentiu Mihai PALADE, Adriana Laura MIHAI, Alina Cristina ADASCĂLULUI, Gabriela-Andreea HORNEȚ, Mioara NEGOIȚĂ

National Research & Development Institute for Food Bioresources, IBA Bucharest, 6 Dinu Vintilă Street, District 2, 02110, Bucharest, Romania

Corresponding author email: mihai_laura21@yahoo.com

Abstract

Polycyclic aromatic hydrocarbons (PAHs), environmental and food processing contaminants made up of two or more fused aromatic rings, are generated during incomplete combustion of organic matter. Besides the environmental sources (fossil fuels, wood fires, volcano eruptions), food contamination with PAHs and their derivatives along the food chain contributes highly on human exposure. This work aims at conveying an outlook on the occurrence of PAHs in food, regulations, respective sample pre-treatment and analysis. Owing to their highly lipophilic nature, PAH analysis in food generally includes very expensive and time-consuming extraction and purification; hence, more efficient alternatives are sought. In this context, the QuEChERS (Quick, Easy, Cheap, Effective, Rugged and Safe) method has become increasingly popular for screening different contaminants in various food matrices (e.g. meat, cereal, edible oils). The advantages of the method presented herein aim at providing the reduction of organic reagent use and simplification of the processing steps. The optimal QuEChERS sample preparation conditions combined with the established detection and quantification tools (LC-MS, GC-MS) represent an efficient approach for routine analysis pertaining increased accuracy, repeatability and precision.

Key words*: polycyclic aromatic hydrocarbons, contaminants, QuEChERS, food analysis, trends.*

O.12. NEW DATA ON INSECTICIDAL ACTIVITY OF SOME NATIVE BACTERIAL AND FUNGAL STRAINS

Anna MOLDOVAN, Natalia MUNTEANU-MOLOTIEVSKIY, Ion TODERAS

Institute of Zoology, Moldova State University, 1 Academiei Str., Chisinau, Republic of Moldova

Corresponding author email: anna.moldovan@yahoo.com

Abstract

The research aimed to identify strains of bacteria and fungi to be used in the sustainable management of pests of the tomato crop in the Republic of Moldova. Ten strains of Bacillus spp. and ten strains of Beauveria spp. were tested against adults and larvae of the potato beetle species, Leptinotarsa decemlineata. Altogether four treatments were set up, two for adults and two for larvae. In performed bioassay tests, some strains have shown good insecticidal activity against adult insects. For further biopesticide development, highlighted strains will be physiologically, and biochemically characterized, and suitable formulations will be tested under field conditions.

Key words*: insecticidal activity, bacteria, fungi, potato beetle, pest management.*

O.13. ANTIMICROBIAL ACTIVITY OF MICROORGANISMS ISOLATED FROM SILT OF THE "LA IZVOR" LAKE SYSTEM (CHISINAU MUNICIPALITY)

Tamara SÎRBU, Svetlana BURȚEVA, Maxim BÎRSA, Nina BOGDAN-GOLUBI, Valerina SLANINA, Cristina MOLDOVAN, Olga ȚURCAN

Institute of Microbiology and Biotechnology of the Technical University of Moldova, 1 Academiei Str., Chisinau, Republic of Moldova

Corresponding author email: tamara.sirbu@imb.utm.md

Abstract

Microorganisms are the main source of various bioactive substances used in diverse fields of biotechnology. A current problem in agriculture is the fight against various phytopathogens, which cause crop diseases. Current trends worldwide are green agricultural methods. Actinobacteria, bacteria, and micromycetes are known to naturally associate with plants and have a beneficial effect on their growth. Thus, the groups of microorganisms listed above were isolated from the silt samples of the "La izvor" lake system (Chisinau municipality), and their screening was performed to combat phytopathogenic agents that cause plant diseases. The following strains of microorganism actively inhibit the growth of phytopathogenic fungi: A. alternata - 8 micromycetes, 2 bacteria; A. niger - 1 micromycete, 3 actinobacteria; B. cinerea - 5 micromycetes, 4 bacteria; F. oxysporum - 7 micromycetes, 3 actinobacteria, 2 bacteria.
The growth of phytopathogenic bacteria was actively inhibited only by micromycetes: B. subtilis - 15 strains; X. campestris - 8 strains; C. michiganensis - 5 strains; A. tumefaciens - 3 strains; E. carotovora - 5 strains.

Key words*: actinobacteria, antibacterial activity, antifungal activity, bacteria, micromycetes.*

O.14. IDENTIFICATION OF NON-*SACCHAROMYCES* YEAST STRAINS ISOLATED LOCAL TRADITIONAL SORGHUM BEER PRODUCED IN ABIDJAN DISTRICT (CÔTE D'IVOIRE) AND THEIR ABILITY TO CONDUCT ALCOHOLIC FERMENTATION

Wahauwouele Hermann COULIBALY

University Nangui Abrogoua, road express of Abobo, Abidjan,
Ivory Coast (Cote D`Ivoire)

Corresponding author email: wahauwouele@yahoo.fr

Abstract

Studies on yeasts involved in traditional sorghum beer fermentation in several African countries revealed the presence of two groups: Saccharomyces and non-Saccharomyces. If Saccharomyces strains were reputed for their fermentation performances, the non-Saccharomyces yeast strains have been recognized for their contribution to improve the beverage`s organoleptic quality, justifying their use as aromatic starter. However, most studies were focused only on Saccharomyces strains as starter. In this work, the non-Saccharomyces yeast strains included in traditional inoculum of traditional sorghum beer was investigated. Thus, identification of non-Saccharomyces yeast strains by PCR-RLFP followed sequencing of D1/D2 domain revealed the occurrence of 2 species: Issatckenkia orientalis and Pichia kudriavzevii with predominance for Issatckenkia orientalis. Microbial dynamic showed that Issatckenkia orientalis specie was found to beginning fermentation, while Pichia kudriavzevii occurred to end fermentation. Fermentation characteristics showed that Issatckenkia orientalis seemed suitable for sorghum beer production among 2 species identified. Sensory analysis showed that the beers produced from Issatckenkia orientalis and Saccharomyces cerevisiae were characterized the same aromatic note and flavor: cereal and sour, with high perception for beer from Issatckenkia orientalis

Key words*: Issatckenkia orientalis, Pichia kudriavzevii, non-Saccharomyces, traditional sorghum beer.*

O.15. CONSUMPTION OF CASHEW KERNEL-BASED FOOD PRODUCTS AND ITS NUTRITIONAL POTENTIALITIES

Wahauwouele Hermann COULIBALY[1], Yabo Majoie Geroxie TOHOYESSOU[2], Carmelle MIZEHOUN-ADISSODA[3], Zana Daniel COULIBALY[4], Michael Akenteng WIAFE[5], Fatoumata CAMARA[4]

[1]Biotechnology and Food Microbiology Laboratory,
Food Science and Technology, Formation and Research Unit,
University Nangui Abrogoua, 02 BP 801 Abidjan 02, Côte d'Ivoire
[2]Biochemistry and Cell Biology Department, Faculty of Sciences and Techniques,
Biology and Molecular Typage in Microbiology Laboratory,
University of Abomey-Calavi, 05 PB 1604 Cotonou, Bénin
[3]Faculty of Health Sciences, School of Nutrition and Dietetics,
University of Abomey-Calavi (FSS/UAC), 01 BP 188, Cotonou, Bénin
[4]Nutrition and Food Safety Laboratory, Food Science and Technology,
Formation and Research Unit, University Nangui Abrogoua,
02 BP 801 Abidjan 02, Côte d'Ivoire
[5]Department of Nutritional Sciences, School of Allied Health Sciences,
University of Development Studies, Tamale, Ghana

Corresponding author email: tgeroxie@yahoo.fr

Abstract

Also known as mahogany, cashew or cashew apple, the cashew tree (Anacardium occidentale L.) appears today in Africa as a strategic culture generating significant income. The kernel is rich in lipids and contains about 20% protein. Cashew kernel consumption remains popular and present in the dietary habits of sub-Saharan African populations. This study aimed to determine the form, timing, nutrient and microbial content of cashew kernels consumed. A survey was conducted and showed that 74.5% of the respondents consumed cashew kernels in roasted form and 87.5% used them as snacks. The assays of energy, carbohydrates, lipids, moisture, fiber, iron and magnesium showed a significant difference ($P<0.05$) between the samples. Microbiological analysis of the roasted cashew kernel samples showed that only aerobic mesophilic germs were found with a load of 2.46 ± 0.05 (Log CFU/g) and 2.51 ± 0.07 (Log CFU/g) for the cashew supermarket (CKS) and the local cashew kernel market (CKM) respectively. In sum, microbiologically, the roasted cashew kernel samples were both of acceptable quality. The roasted cashew kernel should therefore be further valorized as it is still a by-product of the cashew industry.

Key words*: nutritional potentiality, roasted cashew kernel, snacking, survey.*

POSTER PRESENTATIONS

SUBSECTION I: AGRICULTURAL BIOTECHNOLOGY

P.I.1. THE EFFECT OF *TRICHODERMA* AND DIATOMITE ON THE GROWTH AND DEVELOPMENT PARAMETERS OF SOME BELL PEPPER SPECIES

Cristian-Alexandru TOADER[1], Floarea BURNICHI[1], Mona Elena POPA[2]

[1]Vegetable Research and Development Station Buzău,
23 Mesteacănului Street, Buzău, România
[2]University of Agronomic Sciences and Veterinary Medicine of Bucharest,
59 Mărăști Blvd, District 1, Bucharest, Romania

Corresponding author email: alecsx_kid@yahoo.com

Abstract

Within the Buzău Vegetable Development Research Station, aspects were determined and monitored regarding the effectiveness of products based on Trichoderma T85, administered at planting, 3 granules per plant, for bell pepper culture and observations regarding the effectiveness of bell pepper growth and development parameters, Cantemir variety, variety approved by S.C.D.L. Lip. Trichoderma viride T85 is a fungal inoculant that was applied to variant no. 5 - three granules at planting and solid diatomite, which was incorporated into the soil during the vegetation period at V1, V2, V3, V4. The obtained results confirm the data presented in the specialized literature-Treatments with mixed bacterial preparations, with Trichoderma spp. and with solid diatomite can have a beneficial influence on the growth and development of vegetable species cultivated in organic or conventional systems, according to studies carried out over time, both in the country and abroad. This paper evaluates the effectiveness and benefits of using these bio-stimulants.

Key words*: Trichoderma, Diatomite, Capsicum annuum, fertilizer, pepper fruit, biological control.*

P.I.2. COMPARATIVE STUDY ON THE COMPOSITION, ANTIOXIDANT AND ANTIMICROBIAL ACTIVITY OF FENNEL HYDROLATES

Elena MIHAI[1], Alexandra GASPAR-PINTILIESCU[1], Teodora CIUCAN[1], Ana-Maria PRELIPCEAN[1], Justinian TOMESCU[2], Miruna NEAGU[2], Oana CRACIUNESCU[1]

[1]National Institute of Research and Development for Biological Sciences, 296 Spl. Independenței, 060031, Bucharest, Romania
[2]S.C. HOFIGAL S.A., 2 Intrarea Serelor, 042124, Bucharest, Romania

Corresponding author email: anele_drag@yahoo.com

Abstract

The aim of this study was to investigate the composition and biological properties of hydrolates from fennel (Foeniculum vulgare L.*) seeds and their usefulness in food and biomedical applications. Hydrolates were obtained by steam- and hydro-distillation of fennel seeds followed by essential oil separation. GC-MS analysis indicated the presence of volatile compounds in the hydrodistilled extract. HPLC analysis of fennel hydrolates showed a higher concentration of phenolic compounds in the steam distilled extract. The antioxidant activity, determined as Trolox equivalent antioxidant capacity (TEAC) and cupric reducing antioxidant capacity (CUPRAC), was correlated to the total phenolic content of fennel hydrolates, being higher in the steam distilled extract. Thus, besides volatiles, the phenolic compounds could significantly increase antioxidant activity. In turn, higher inhibition of bacterial growth was found for the hydrodistilled extract, due to the significant number of volatile compounds. In conclusion, fennel hydrolates represent a waste of significant interest for valorization within the circular bioeconomy and further application in the food and biomedical industry.*

Key words*: Foeniculum vulgare, by-product, phenolics, antioxidant activity, antimicrobial activity.*

P.I.3. GENETIC RELATIONSHIPS AMONG DIFFERENT BROOMRAPE RACES FROM THE BLACK SEA BASIN

Maria DUCA, Ina BIVOL

Center of Functional Genetics, Moldova State University, 60 Mateevici Street, MD-2009, Chisinau, Republic of Moldova

Corresponding author email: bivolinga@yahoo.com

Abstract

Microsatellite loci represent prevalent molecular markers for assessing genetic diversity, phylogenetic and evolutionary relationships between different in origin broomrape taxon. In the present study, the genetic differences and relationships among 3 broomrape races from Bulgaria, Turkiye, Moldova and Romania were identified by ISSR markers. The obtained results on genetic diversity parameters showed that race H is more variable than races G and E. However, the gene diversity within populations was the greatest in race G, followed by race H and E. The limited gene flow for races H and G determined significant genetic differentiation of populations. Conversely, a comparatively moderate gene flow for race E pointed to a little differentiation among populations. These findings were also corroborated by AMOVA, demonstrating high genetic diferences within (89%) and lower (11%) among races. The investigation also revealed the existence evolutionary differences between all races. This situation proves the action of evolutive molecular mechanisms which offered, in time, discrete genetic particularities at broomrape, indicating that the existing races are unstable over time and they are constantly adapting to the new more sunflower resistance hybrids.

Key words*: Orobanche cumana****,*** *ISSR markers, genetic relationships, broomrape races.*

P.I.4. POPULATION GENETICS STUDIES ON *CALAMUS NAGBETTAI* R.R. FERNALD & DEY IN WESTERN GHATS REGIONS OF KARNATAKA IN SOUTHERN INDIA

Madar UMESH, Devarajan THANGADURAI, Jeyabalan SANGEETHA, Pujar RAJENDRA, Chippalakatti PAVITRA and Iliger RANGAYYA

Department of Botany, Karnatak University, Dharwad, 580003, Karnataka, India

Corresponding author email: drumeshsaranaikar@gmail.com

Abstract

Calamus nagbettai are spiny climbing palms belonging to the family Arecaceae which are mainly used for making furniture products and handcrafts. DNA markers have been employed to estimate the level of genetic diversity and distinguish the distribution patterns of genetic deviation within and among populations. Studies on the genetic dissimilarity in twenty-six populations of Calamus nagbettai have been assisted by the development of molecular markers. Seven Random Amplified Polymorphic DNA (RAPD) markers were utilised to evaluate genetic diversity and genetic relationships between twenty-six accessions of Calamus nagbettai. The primers OPA-03 produced the maximum amount of amplicons (260 amplicons), whereas OPA-06 produced the least number of loci (75 amplicons). The molecular weight of the primers lies between 200 to 2200 bp. Genetic similarity coefficients among 26 wild populations of C. nagbettai ranged from 0.9 to 1.00 which was calculated using Jaccard's similarity coefficient. The dendrogram constructed using RAPD data for the accessions which formed 2 major clusters of 26 accessions of Calamus sp. The study concludes that RAPD is a potential molecular marker to evaluate the genetic diversity of C. nagbettai species.

Key words*: Calamus nagbettai, rattans, genetic diversity, RAPD markers.*

P.I.5. ANALYSIS OF NUTRITIONAL CONSTITUENTS IN DIFFERENT FRUIT TISSUES IN FOUR CITRUS SPECIES FROM SOUTH ALBANIA REGION

Ilir LLOHA, Enkeleda BERBERI, Ervin SHISHMANI

Agricultural University of Tirana, Faculty of Biotechnology and Food, Department of Food Science and Biotechnology, "Paisi Vodica" Street, 1050, Tirane, Albania

Corresponding author email: illoha@ubt.edu.al

Abstract

Statistical Office of the European Communities (Eurostat) ranks Albania sixth in Europe for fresh orange production in 2018, and the mandarin production was greater than the global and EU average yields, indicating a high-performing subsector. It is essential to examine the chemical composition of citrus fruits cultivated in Albania to fully benefit from their advantages, which was the motivation for this research. This study comprised four different groupings of citrus species (C. sinensis, C. limon, C. reticulata and C. paradisi) harvested in south Albania region. Among others, total polyphenol content (TPC), total flavonoid content (TFC), vitamin C content (VCC), and antioxidant activity were the focus of our analyses. SPSS and Sigma Plot statistical programs were used to analyse the data. The percentages of different biochemical components varied not only across species, but also between different citrus fruit tissues (Sigma Plot, ANOVA- Tukey test, $p<0.05$). Citrus paradise shows clearly a significantly high TPC compared to other citrus species. Our findings indicate the presence of a significant amount of bioactive compounds in citrus peel and pulp, making them ideal candidates for use in antioxidant-rich diets and the pharmaceutical industry.

Key words*: Citrus species, bioactive compounds, Sigma Plot, SPSS.*

P.I.6. AMINO ACID COMPOSITION AND ANTIOXIDANT ACTIVITY OF BIOLOGICALLY ACTIVE PREPARATIONS OBTAINED FROM WINE YEAST SEDIMENTS

Oleg CHISELIȚA, Alina BEȘLIU, Natalia CHISELIȚA, Nadejda EFREMOVA, Elena TOFAN

Institute of Microbiology and Biotechnology of Technical University of Moldova, 1 Academiei Street, Chisinau, Republic of Moldova

Corresponding author email: alina.besliu@imb.utm.md

Abstract

In this study, 4 biologically active preparations obtained from wine yeast sediments are characterized according to their amino acid content and total antioxidant activity.
As a result, it has been established that the preparations contain the full range of essential and immunoactive amino acids, the content of essential amino acids varies between 13.7-287,662 mg/100 ml and immunoactive 13.9-447.33 mg/100 ml. The study of the total antioxidant activity in the biologically active preparations obtained is within the limits of 33.4 ± 0.3-85.9 ± 0.9% inhibition, the maximum being obtained in the amino acid protein preparation SRM-AAP.
In conclusion, we can mention that the obtained results indicate that the biologically active preparations obtained from the sediments of wine yeasts are rich in essential and immunoactive amino acids and have a high antioxidant activity, being attractive for implementation in agriculture, especially in animal husbandry, food and cosmetic industry.

Key words*: amino acid; antioxidant activity, biologically active preparations, wine yeast.*

P.I.7. REVIEW ON SECONDARY METABOLITES IN *SALVIA* SPP.

Behnaz RAHMANIFAR, Oana LIVADARIU, Călina Petruța CORNEA

University of Agronomic Sciences and Veterinary Medicine of Bucharest,
Faculty of Biotechnologies, 59 Mărăști Blvd, District 1,
11464, Bucharest, Romania

Corresponding author email: behnaz.rahmanifar@doctorat.usamv.ro

Abstract

Salvia genus is the largest member of the Lamiaceae family with around 900 species and is widely distributed in tropical and temperate regions. These species are usually aromatic and have numerous pharmacological and therapeutic applications. They are used in traditional medicine to treat eczema, colds, bronchitis, digestive problems, sore throat, tuberculosis, haemorrhage, some cardiovascular and menstrual disorder. Modern studies suggest that various Salvia species have antibacterial, antifungal, anticancer, antioxidant, and anti-inflammatory properties. These activities are consequence of biosynthesized bioactive substances, including terpenoids, flavonoids, phenolic compounds, etc. These chemical constituents refer to as secondary metabolites and exert multiple therapeutic activities without showing important side effects. The present review summarized the information published in the scientific literature on the secondary metabolites in Salvia spp. In addition, the recent biotechnological approaches, advances in metabolic engineering strategies, successful results and potential problems were presented.

Key words*: bioactive substances, Lamiaceae*, *metabolic engineering, Salvia* sp., *secondary metabolites.*

P.I.8. SCREENING OF SSR AND EST-SSR MARKERS FOR BACKGROUND SELECTION IN MUNGBEAN

Ketwalee SIWAPITHAKPONG, Sukanya INTHAISONG, Witsarut CHUEAKHUNTHOD, Piyangkoon JAUKWON, Piyada Alisha TANTASAWAT

Suranaree University of Technology, School of Crop Production Technology, Institute of Agricultural Technology, 111 University Avenue, Muang District, Nakhon Ratchasima, 30000, Thailand

Corresponding author email: piyada@sut.ac.th

Abstract

This study aimed to quantify the recurrent parent genome (RPG) recovery of the new mungbean introgression lines using SSR and EST-SSR markers, and selection of backcross progenies of the crosses between a resistant line (SUPER5) and two recurrent parents (KING and H3). A total of 160 SSR and EST-SSR markers covering 11 mungbean chromosomes were applied for parental polymorphism identification. Among these, 6 polymorphic markers were linked to domestication related traits located on linkage groups (LGs) 1, 3, 7 and 10. Twenty-seven (16.9%) and 23 (14.4%) SSR and EST-SSR markers were found to be distinct and clearly polymorphic between KING and SUPER5, and H3 and SUPER5, respectively. These polymorphic markers were utilized to analyse the RPG recovery in BC_1F_1 and BC_2F_1 progenies. The BC_2F_1 selected progenies with high RPG recovery ranging from 87.2-94.7% and 92.1-97.8% in KING and H3 populations, respectively, were further used to produce BC_3F_1 seeds. These results suggest that SSR and EST-SSR markers can be used in marker-assisted selection (MAS) for background selection to accelerate backcrossing.

Key words*: marker-assisted backcross breeding, molecular markers, polymorphism, recurrent parent genome recovery, Vigna radiata (L.) Wilczek.*

P.I.9. THE INFLUENCE OF GROWTH-STIMULATING *RHYSOBACTERIA* (PGPB) ON THE PHYSIOLOGICAL PROCESSES AND PRODUCTIVITY POTENTIAL OF GRAPEVINES

Tatiana DAVID[1], Leonid POPOV[1], Leonid VOLOSCIUC[2], Maria GAMURAR[1], Cristina MUNTEANU[1]

[1]Institute of Pedology, Agrochemistry and Soil Protection "Nicolae Dimo", 100 Ialoveni Street, Chisinau, Republic of Moldova
[2]State University of Moldova, 60 Mateevici Street, Chisinau, Republic of Moldova

Corresponding author email: tatianadavid987@gmail.com

Abstract

Environmental contamination, deteriorating socio-economic relations and increasingly frequent weather anomalies have complicated the phytosanitary condition of the vineyard complex. The development of organic farming, the application of bacterial products, has attracted increasing attention in recent years. In this article are presented the results of research on the influence of bacterial products of the group PGPB (plant growth promoting bacteria) in the realization of productivity potential and some physiological processes in grapevines. It was demonstrated that the application of suspensions of Pseudomonas aureofaciens and Bacillus thuringiensis var. kurstak bacteria with the addition of SiO_2 at different stages of plant development contributed to the increase of photosynthetic pigment content, transpiration, stomatal conductivity, and increased quantity and quality of grapevine harvest.

Key words*: plant growth-promoting bacteria, photosynthetic pigments, productivity, transpiration, stomatal conductivity.*

P.I.10. REVIEW ON DIFFERENT APPLICATIONS OF *LAVANDULA* SPP. AS A SOURCE OF BIOACTIVE COMPOUNDS

Ionut Georgica MARCHIDAN, Mihaela GEICU CRISTEA, Elisabeta Elena POPA, Gabriela BUTNARIU, Elena Narcisa BABEANU

University of Agronomic Sciences and Veterinary Medicine of Bucharest, 59 Mărăşti Blvd, District 1, Bucharest, Romania

Corresponding author emails: mihaela_geicu@yahoo.com, elena.eli.tanase@gmail.com

Abstract

Lavandula sp., commonly known as lavender, is an aromatic and medicinal plant that belongs to the Lamiacea family and includes 47 known species of flowering plants of which we mention Lavandula angustifolia, Lavandula stoechas, Lavandula pedunculata, Lavandula dentata, Lavandula multifida, Lavandula latifolia, Lavandula viridis, Lavandula lanata, etc., many of them being hybrids or varieties with important economic value for the pharmaceutical, cosmetic, perfumery, food and agricultural industries. This paper reviews recent literature regarding the characteristics and properties of Lavandula spp., providing a comprehensive view about the use of lavender essential oils and plant extracts in various industrial fields. Variability is discussed by species, geographic area, plant material and extraction methods.

Key words*: Lavandula spp., biologic compounds, various applications.*

P.I.11. COMPARISON OF CLASSICAL VERSUS QPCR METHODS IN THE DETECTION OF *BOTRYTIS CINEREA* IN RASPBERRIES

Quthama AL ZAIDI, Florentina BADEA, Camelia Filofteia DIGUTA, Florentina MATEI

University of Agronomic Sciences and Veterinary Medicine of Bucharest, 59 Mărăşti Blvd, District 1, Bucharest, Romania

Corresponding author email: alzaidy2004.n3@gmail.com

Abstract

Botrytis cinerea, is a necrotrophic fungus that causes gray mold on fruits and vegetables. This mold ranked second in the list of the top ten fungal pathogens. The aim of this study was to develop a system for rapid and accurate identification and quantification of B. cinerea on fresh raspberry by quantitative real-time PCR (qPCR) and a comparison was made between traditional methods (cell culture) and molecular tool. Raspberry samples were purchased from the local supermarkets. Raspberry diluted samples were cultivated on Dichloran Rose Bengal Chloramphenicol agar selective medium used for the growth of mold, then DNA was extracted from the same samples and qPCR was done. In classical methods (cell culture) the result was negative (no fungal colony growth). By the qPCR technique, B. cinerea was detected in two out of the three samples. In qPCR technology, the test proved to be selective, rapid and sensitive and can be used for the diagnosis of B. cinerea.

Key words*: raspberries, Botrytis cinerea, qPCR.*

P.I.12. PRELIMINARY RESEARCH ON SUPERABSORBENT HYDROGELS BEHAVIOR TO WATER AND FERTILIZERS ABSORPTION AND RELEASE

Amalia Carmen MITELUT[1], Elena MĂNĂILĂ[2], Silvana DĂNĂILĂ-GUIDEA[1], Mihaela DRĂGHICI[1], Ion NIȚU[1], Paul Alexandru POPESCU[1], Elisabeta Elena POPA[1], Gabriela CRĂCIUN[2], Mihaela GEICU-CRISTEA[1], Călina Petruța CORNEA[1], Mona Elena POPA[1]

[1]University of Agronomic Sciences and Veterinary Medicine of Bucharest, 59 Mărăşti Blvd, District 1, Bucharest, Romania
[2]National Institute for Laser, Plasma and Radiation Physics - INFLPR RA, Măgurele, Romania

Corresponding author email: elena.eli.tanase@gmail.com

Abstract

In recent decades, the requirements for food and agricultural production have increased dramatically and have been met mainly by the modernization of agricultural techniques including application of new pesticides and fertilizers. However, one of the main problems faced today is related to ensuring a sustainable use of water and nutrients from soil. To overcome these drawbacks, research was conducted in the development of biodegradable superabsorbent polymers (BSPs) in order to be applied in agriculture. The BSPs are biodegradable hydrogels with functional properties which allow them to absorb and retain impressive amounts of water and fertilizers which are later slowly released into soil, when necessary. The aim of this study was to conduct a preliminary research on the development and functionality of BSPs in terms of water and fertilizer absorption and release in different conditions, in order to select the best formulation from this point of view. The obtained results are promising, showing that the capacity of absorption and realease depend on various factors including the obtaining method and composition of the BSPs or pH of the tested solutions.

Key words*: superabsorbant polymers, hydrogels, biodegradable, sustainability.*

P.I.13. *BACILLUS* SP. AS A BIOPESTICIDE AGAINST PHYTOPATHOGENIC FUNGI

Pelias RAFANOMEZANTSOA, Noureddine KARKACHI

University of Oran 1 Ahmed Ben Bella, El M`Naouer 31000, Oran, Algeria

Corresponding author email: rafanopelias@gmail.com

Abstract

With the aim of reducing the use of chemical pesticides in global agriculture, due to their harmful effects on the environment and consumers, biocontrol is considered the new trend for suppressing crop diseases. The first step in this strategy is to find effective biological agents against a given phytopathogen. In this study, 84 bacterial isolates from soil were screened for their antifungal activity against two phytopathogens frequently encountered in Algeria, Fusarium oxysporum f.sp. lycopersici (Fol) and Ascochyta pisi, responsible for tomato wilt and pea rust disease, respectively. Among the tested isolates, three showed inhibition rates ranging from 44 to 55% against Fol and 63 to 74% against A. pisi. Phenotypic identification revealed that these three isolates all belong to the genus Bacillus. Several tests were conducted to evaluate their antifungal activity, including the evaluation of the antifungal effect of cell-free filtrates and the detection of hydrolytic enzymes. These tests will help identify the mechanisms preferred by the strains to inhibit phytopathogens. This is very important for their use in agriculture as biocontrol agents, to limit the use of chemical pesticides.

Key words*: antifungal activity, Bacillus, biological control, phytopathogens.*

SUBSECTION II: FOOD BIOTECHNOLOGY

P.II.1. EVALUATION METHODS OF MYCOTOXIGENIC CONTAMINANTS IN FEED RAW MATERIALS - A REVIEW

Asawir Esamaldeen Ebrahim MOHAMED[1], Oana-Alina BOIU-SICUIA[1,2], Călina Petruța CORNEA[1]

[1]University of Agronomic Sciences and Veterinary Medicine of Bucharest, Faculty of Biotechnologies, 59 Mărăști Blvd, District 1, PC 011464, Bucharest, Romania
[2]Research - Development Institute for Plant Protection, 8 Ion Ionescu de la Brad Blvd, District 1, PC 013813, Bucharest, Romania

Corresponding author email: sicuia_oana@yahoo.com

Abstract

Mycotoxigenic contaminants in feed raw materials are a serious problem in animal production due to their negative impact on animal performance and health. The most hazardous genera of mycotoxigenic fungi that can contaminate feed raw materials are Aspergillus, Fusarium, and Penicillium. However, not all fungi of these genera are mycotoxin producers. Therefore, to differentiate contaminated from healthy feed it is important to apply fast detection methods. This review paper aims to present fast qualitative detection methods of mycotoxigenic contaminants. Studies are focused on molecular techniques such as PCR (polymerase chain reaction), as well as chromatographic method such as TLC (thin layer chromatography). Using the PCR method, there can be detected either the fungal species and genera, either the presence of certain genes or gene clusters encoding for mycotoxin synthesis. Mycotoxin detection through TLC is an affinity-based method, in which non-volatile compounds are detected based on their retention factor (Rf) depending on the stationary and mobile phase used. The mycotoxigenic contaminants reviewed in this paper are Aspergillus Fusarium and Penicillium and their producers.

Key words*: feed, mycotoxins, PCR (polymerase chain reaction), TLC (thin layer chromatography).*

P.II.2. PROBIOTICS AS NUTRIBIOTICS

Dan VODNAR, Adrian Martău ELEMER ȘIMON

USAMV of Cluj-Napoca, 3-5 Mănăştur Street, Cluj-Napoca, Romania

Corresponding author email: dan.vodnar@usamvcluj.ro

Abstract

Food, food products, and dietary supplements all fall under the category of `nutribiotics,` and as such, they must adhere to laws and norms governing the safety of these products and the nutritional needs of consumers. Certain microorganisms can have beneficial effects on human health by improving one`s diet. These microbes may do so by directly producing nutrients like vitamins and minerals, by converting precursors to bioactive metabolites, or by alleviating health issues associated with poor nutrition or metabolic function. `Nutribiotics` refer to a broad category of probiotics that are utilized for their nutraceutic benefits. Some types of microbes are responsible for vitamin production and have a role in vitamin availability in the host organism, which in this case is the human. These vitamins are generated by the gut microbiota, thus people who don`t get enough of them from their food rely on gut microbial production to meet their nutritional needs. Consumption of nutribiotics has the potential to boost vitamin status by improving absorption of these nutrients in the digestive tract.

Key words*: probiotic, nutribiotic.*

P.II.3. THERMAL OXIDATIVE STABILITY OF COLD-PRESSED OIL BLENDS: GC–MS, LF NMR, DSC AND STUDIES

Wojciech CICHOCKI[1], Dominik KMIECIK[1], Hanna Maria BARANOWSKA[2], Hanna STAROSZCZYK[3], Agata SOMMER[3], Przemysław Łukasz KOWALCZEWSKI[1]

[1]Department of Food Technology of Plant Origin, Poznań University of Life Sciences, 60-634 Poznań, Poland
[2]Department of Physics and Biophysics, Poznań University of Life Sciences, 60-637 Poznań, Poland
[3]Department of Chemistry, Technology and Biotechnology of Food, Chemical Faculty, Gdańsk University of Technology, 80-233 Gdańsk, Poland

Corresponding author email: przemyslaw.kowalczewski@up.poznan.pl

Abstract

The growing awareness of consumers means that new products are sought after, which, apart from meeting the basic demand for macronutrients and energy, will have a positive impact on our health. This poster is aimed on the characteristics of the new oil blends with a nutritious ω6/ω3 fatty acid ratio (5: 1), as well as the heat treatment effect (at 170 and 200°C) on the nutritional value and stability of the oils. Both the profile of fatty acids and the process of formation of polar compounds and triacylglycerol polymers were analyzed. The fatty acid composition was analyzed by gas chromatography (GC-MS). The high content of essential unsaturated fatty acids has been confirmed. The differential scanning calorimetry (DSC) technique was used to test the oxidative stability of the oils. Moreover, molecular dynamics of oils and water contained in them were analyzed using the low field nuclear magnetic resonance (LF NMR) technique. Regardless of the changes in heated oils, none of the prepared blends exceeded the limit of the polar fraction content, maintaining the programmed ratio of ω6 to ω3 acids. It has been shown that the developed oil blends have a greater oxidation stability than the pure oils they contain.
The National Centre for Research and Development of Poland (NCBR) is acknowledged for funding provided within the programme LIDER under grant agreement No. LIDER/27/0105/L-11/19/NCBR/2020 (PI: Przemysław Kowalczewski).

***Key words**: fatty acid composition; cold-pressed seed oils; triacylglycerol polymers; heat treatment; oxidation kinetics.*

P.II.4. TECHNOLOGIES FOR SOURDOUGH OBTAINING, FERMENTATION AND APPLICATIONS - A REVIEW

Sabina-Andreea BOBEA[1, 2], Nastasia BELC[1, 2], Călina Petruța CORNEA[1]

[1]University of Agronomic Sciences and Veterinary Medicine of Bucharest, 59 Mărăști Blvd, District 1, 011464, Bucharest, Romania
[2]National Research & Development Institute for Food Bioresources - IBA Bucharest, 6 Dinu Vintilă Street, District 2, 021102, Bucharest, Romania

Corresponding author email: sabina.bobea@bioresurse.ro

Abstract

Recent trends are towards long-life, nutritious, preservative-free products that improve immunity, digestion and well-being and are tailored to nutritional needs and lifestyle of the consumer. In this perception, sourdough bread is part of this product category. The sourdough has a key role in obtaining a product with sensory properties such as: color, flavor, taste, texture even bread volume. The microflora is dominated by lactic acid bacteria and yeast, very important elements when we talk about the fermentation of bread dough. The factors influencing dough quality are: dough yield, temperature, microflora, environmental acidity and substrate. Dough can be classified into 3 types, of which the most used in the bakery industry is Type III. The beneficial contribution that this type of fermentation brings is not only to increase the volume of the bread, the flavor and the nutritional value, but also to extend the shelf life by inhibiting spoilage bacteria.

Key words*: lactic acid bacteria, yeast, sourdough technology, fermentation.*

P.II.5. RESEARCH ON THE USE OF *SACCHARINA LATISSIMA* SEAWEED AS A POSSIBLE FUNCTIONAL INGREDIENT IN THE BAKERY INDUSTRY

Oana Bianca OPREA[1], Liviu GACEU[1], Ingrid Camilla CLAUSEN[2], Sigurd SANNAN[2], Ignat TOLSTOREBROV[3]

[1]Transilvania University of Brasov, 29 Eroilor Blvd, Brasov, Romania
[2]Sintef Energy, Sem Sælands vei 11, 7034, Trondheim, Norway
[3]Norwegian University of Science and Technology, Høgskoleringen 1, 7034, Trondheim, Norway

Corresponding author email: oprea.oana.bianca@unitbv.ro

Abstract

Due to its nutritional qualities, particularly its high fiber and mineral content, Saccharina Latissima seaweed is a sustainable food supply in European nations. The seaweed was harvested from a Spanish ecological farm, microwave dried at 5% humidity under pressure, then ground to a size of 30 microns. Using standardized techniques, the contents of moisture, protein, crude fiber, and minerals were measured. White wheat flour (type 480) from the bread formula was substituted to varying degrees (1.5%, 3%, 4.5%, and 6%). For these, the primary rheological characteristics of flour mixtures were examined, and baking experiments were carried out using the direct technique. Bread specified volume, porosity, and crust/crumb color were the starting points for the analysis. Additionally, a panel test sensory analysis was conducted, in which a group of 10 specifically trained panelists, ranging in age from 25 to 60, assessed the bread samples and assigned grades for the primary sensory attributions, ranging from 1 (lowest intensity) to 5 (highest intensity). Consumers indicated a maximum acceptable level of 3% due to the strong aftertaste, despite the findings showing excellent rheological behavior up to a 4.5% replacement degree.

Key words*: bakery, seaweed, rheological and sensorial analysis.*

P.II.6. BIOCHEMICAL AND MICROBIOLOGICAL CHARACTERIZATION OF TRADITIONAL ROMANIAN FERMENTED DRINKS - SOCATA AND BORS - A REVIEW

Ecaterina-Andreea CONSTANTIN[1, 2], Diana CONSTANTINESCU-ARUXANDREI[2], Florentina MATEI[1], Sergey SHAPOSHNIKOV[3], Florin OANCEA[1, 2]

[1]University of Agronomic Sciences and Veterinary Medicine of Bucharest, 59 Mărăşti Blvd, District 1, Bucharest, Romania
[2]INCDCP-ICECHIM Bucharest, 202 Spl. Independentei, District 6, Bucharest, Romania
[3]Norgenotech, Totenvegen 2049, 2848 Skreia, Norway

Corresponding author email: florentina.matei@biotehnologii.usamv.ro

Abstract

Fermented beverages are products that involve biochemical changes during the microaerophilic processes under the action of microorganisms and their secreted enzymes. Food fermentations include four main processes: lactic fermentation, alcoholic fermentation, acetic fermentation (which is an aerobic process) and alkaline fermentation. In this paper we aim to review the studies carried out on two Romanian traditional non-dairy fermented beverages which have not benefited of the attention it deserves, such as elderflower (*Sambucus nigra*) *fermented drink (socata) and sour liquid soup seasoning (borş). These drinks are derived from a sweetened infusion of elder flowers (socata) and wheat bran (borş) that are fermented by consortia of microorganisms. Socata was shown to be fermented by consortia of yeast and lactic acid bacteria (LAB). Borş is produced by fermentation with heterofermentative LAB. These traditional fermented beverages are characterized as a source of probiotics. Previous research has demonstrated that both are a rich source of bioactive / antioxidant flavonoids and phenolic acids, minerals and vitamins. Several techniques are used for the determination of the bioactive compounds and antioxidant activity, such as the determination of individual phenolic compounds using HPLC, determination of total phenolic content using Folin-Ciocalteu reagent, determination of ABTS and DPPH radical cation scavenging activity, determination of ferric reducing antioxidant power (FRAP) assay.*

Key words*: fermented drinks, socata, bors, microorganisms, Romania, probiotic, bioactive compound.*

P.II.7. TRANSITION TO THE FUTURE: MEAT ANALOGUES & CULTURED MEAT

Adina NICHITA[1], Urszula TYLEWICZ[2], Mona Elena POPA[1]

[1]University of Agronomic Sciences and Veterinary Medicine of Bucharest, 59 Mărăști Blvd, District 1, Bucharest, Romania
[2]University of Bologna, Piazza Goidanich 60, 47521, Cesena (FC), Italy

Corresponding author email: nichitaadina1979@gmail.com

Abstract

This paper is based on a review of the state of the art related to conventional meat replacing process for future food. This review is based on assessment of 73 articles published between 2001-2023 in order to find the main reason that led to the need to replace meat of animal origin with various meat analogues from different sources. Another objective of this study is the identification of protein sources and nutritional value of meat analogues because this issue led to the new research agendas and industrial challenges. The review of the most relevant studies on how to obtain meat analogues, such as for example extrusion for plant-based meat analogue, open research horizons in improving the sensory and textural properties of plant-based meat analogues. Consumer behaviour of replacing animal meat with meat analogues and cultured meats is not an easy task, requiring in-depth studies and research, and the risk and benefits analysis of plant-based meat analogues. As in any new product development process, this study has also revealed the results related to consumer attitude research regarding meat analogues.

Key words*: meat analogues, cultured meat, sustainability, processing methods, consumer attitude.*

SUBSECTION III: MEDICAL AND PHARMACEUTICAL BIOTECHNOLOGY

P.III.1. ANTIMICROBIAL CELL-PENETRATING PEPTIDES

Cristian MOISA, Andreea Ioana LUPITU, Lucian Octav COPOLOVICI, Dana Maria COPOLOVICI

Aurel Vlaicu University of Arad, 2 Elena Dragoi Street, Arad, Romania

Corresponding author email: moisa.cristian@yahoo.com

Abstract

Antimicrobial peptides (AMPs) occur naturally in almost all forms of life. These peptides are an essential part of the host`s primary defense system against infections brought on by pathogens, fungi, and viruses. For some time, AMPs are viewed as a potential alternative source for the development of new antibiotics. They have a low molecular weight and are represented of less than 50 amino acid bases (Giuliani et al., 2007). The objective of this study is to highlight the current literature status of buforins, in regards of their structures, action mechanisms, and perhaps other biological activities. Most buforins are obtained through Fmoc solid-phase peptide synthesis, and after the peptides are obtained, they are purified using reversed-phase UHPLC. According to previously published research, the α-helical content of buforins is a key component in determining the level of antibacterial activity that it possesses (Cho et al., 2009; Roshanak et al., 2021). Unfortunately, the use of AMPs is limited due to several factors, including their high manufacturing costs, low in vivo bioavailability, toxicity to mammalian cells, and enhanced proteases degradation (Jang et al., 2012).

Key words*: antimicrobial peptides, buforins, cell-penetrating peptides.*

P.III.2. MOISTURIZERS MADE WITH NATURAL INGREDIENTS

Diana GROPOŞILĂ-CONSTANTINESCU, Gabriela MĂRGĂRIT, Gabriela POPA, Dana BARBA

University of Agronomic Sciences and Veterinary Medicine of Bucharest, Faculty of Biotechnologies, 59 Mărăşti Blvd, District 1, Bucharest, Romania

Corresponding author email: bth.diana@yahoo.com

Abstract

The skin has remarkable properties of protection and defense against external aggressions, so it is very important that its health is permanently maintained. The main purpose of this research paper consisted in the formulation of two moisturizing creams based only on natural ingredients. The main ingredients were: fresh lavender flowers, aloe vera gel and coconut butter. The moisturisers were organoleptically, physicochemically and microbiologically analysed. The organoleptic tests showed that the moisturizing creams homogenized very well, did not show phase separations and the smell was very pleasant, specific to lavender. The pH values, between 5.0 and 5.3, were close to the optimal recommended, 5.5, which means that their use will have positive effects on the skin. Following the determination of the acidity index, values between 1.68 and 1.91 were obtained, which means that the products can be used safely, as they have not undergone alteration processes. Microbiological analyses showed low contamination with bacteria and fungi, as both lavender and aloe vera are known for their antibacterial and antifungal effects.

Key words*: aloe vera, lavender, moisturizing creams, skin.*

P.III.3. STUDIES REGARDING ANTIOXIDANT PROPERTIES OF ANTIMICROBIAL BIOPRODUCTS FORMULATED WITH NATURAL POLYMERS

Mohammed Shaymaa Omar MOHAMMED[1], Nicoleta RADU[1], Mariana VOICESCU[2], Lucia Camelia PARVU[3], Narcisa BABEANU[1]

[1]USAMV of Bucharest, 59 Mărăşti Blvd, District 1, Bucharest, Romania
[2]Institute of Chemistry and Physics "Ilie Murgulescu", 202 Splaiul Independentei Street, Bucharest, Romania
[3]National Institute of Pharmaceutical Chemistry R & D of Bucharest - ICCF, 112 Calea Vitan, Bucharest, Romania

Corresponding author email: nicoleta.radu@biotehnologii.usamv.ro

Abstract

The antioxidant activity of antimicrobial bioproducts formulated with natural polymers most often depends on the activities of the active compounds from their composition. In the case of bioproducts with biopolymers, the antioxidant activities depend on the limonene source. In the present case, the antimicrobial activities of antimicrobial gels formulated with biopolymers were determined by the chemiluminescence method, using two sources of limonene, respectively the citrus essentials oils with 97% and respectively with 25% limonene. The results obtained from the chemiluminescence studies have shown that, if an essential oil (EO) with a high limonene content is used in the antimicrobial formulations, such as EO of Citrus sinensis (97% limonene), then the product will most often act as a prooxidant, due to the high limonene content. If the antimicrobial formulations are performed with less concentrated sources of limonene, such as the EO of bergamot (Citrus bergamia), then the resulting bioproducts, in addition to the maximized antimicrobial effect, will also act as antioxidants, the antioxidant activity obtained being 70%.

Key words*: antioxidant activities, antimicrobial gels.*

P.III.4. LIPOSOMES WITH PLANT EXTRACTS IN THE TREATMENT OF CARDIOVASCULAR DISEASES

Ramona-Daniela PAVALOIU, Fawzia SHA'AT, Corina BUBUEANU, Paul BARBUTA, Ciprian FODOR, Mariana FODOR

S.C. PURE LIFE NANO S.R.L., 13 Veronica Micle Street, Suceava, Romania

Corresponding author email: fawzya.shaat@gmail.com

Abstract

Worlwide, cardiovascular diseases (CVDs) is the leading cause of death, taking an estimated 17.8 million lives each year. CVDs include coronary heart disease, rheumatic heart disease, cerebrovascular disease and other conditions. In order to help the treatment of CVDs, this work aims to develop a food supplement based on liposomes. The market for food supplements is growing rapidly but many active ingredients have low bioavailability, especially when taken in high doses. Therefore, this paper is focused on obtaining and characterisation liposomes containing a combination of two plant extracts of Sambucus ebulus and Lycium barbarum. The preparation of liposomes was done by the technique of hydration of the lipid film. Reduction of particle size and degree of uniformity was ensured by the sonication process of the liposomal solutions. The formulations were characterised in terms of entrappment efficiency, particle size, polydispersity index, stability, and the evaluation of antioxidant activity was assessed by DPPH method.

Key words*: lipsomes, cardiovascular, Sambucus ebulus, Lycium barbarum, plant extracts.*

P.III.5. METHODS TO IMPROVE BIOAVAILABILITY OF NATURAL SENOLYTICS - A MINI REVIEW

Dana MIU, Fawzia SHAAT, Ramona-Daniela PAVALOIU

National Institute of Pharmaceutical Chemistry R & D of Bucharest - ICCF, 112 Calea Vitan, Bucharest, Romania

Corresponding author email: pavaloiu.daniella@yahoo.com

Abstract

Senolytics represent a group of substances that can eliminate senescent cells in several aging-related pathologies including Alzheimer`s disease, atherosclerosis, and type 2 diabetes, etc. Also, senolytic use has been proposed as a potential adjuvant approach to improve the response to senescence-inducing conventional and targeted cancer therapies. In various studies natural compounds (quercetin, fisetin, piperlongumine and curcumin) have been discovered to be effective senolytic agents. Despite the unequivocal promise of senolytics, some senolytics have low bioavailability. In this review, we summarize and discuss the latest methods to improve the bioavailability of immunomodulatory and/or immunostimulatory senolytic bioactive substances. Therefore, an in-depth discussion on diverse delivery strategies of senolytic agents and latest updates on a novel senotherapeutic research will be provided.

Key words*: bioavailability, natural compounds, senolytics.*

.

P.III.6. MECHANISMS OF TOXICITY AND MICROSCOPICAL TESTS FOR *DATURA* HERB

Monica ENACHE, Radu MORARU

USAMV of Bucharest, 59 Mărăști Blvd, District 1, Bucharest, Romania

Corresponding author email: enachemonica11@yahoo.com

Abstract

Datura sp. and related plants mandrake (Mandragora officinarum and M. autumnalis), black henbane or stinking nightshade (Hyoscyamus niger), belladonna (Atropa belladonna) and angel`s trumpets (Brugmansia sp.) are considered some of the deadliest plant species. Datura stramonium (jimson weed, thorn apple or devil`s snare) is a weed that sometimes is cultivated as ornamental for its large, pendulous white funnel-shaped flowers, but it is considered dangerous due to accidental or deliberate ingestion of any plant parts. Tropane alkaloids (atropine, hyoscyamine, scopolamine) with strong anticholinergic properties can cause a variety of adverse effects that can lead to death in humans and other animals. They are pharmaceutically active and their mind-altering properties have been known since ancient times. Characteristic toxic symptoms can also occur after skin penetration alone and neither drying nor boiling decrease the plant toxicity. Naturally occuring alkaloids (for example from Stramonii foilum and Daturae innoxiae herba) or synthetic and semisynthetic substitutes have found use in modern medicine too. The present paper presents a review on the mechanisms of toxicity and photomicrographs of characteristic microscopic features of Datura stramonium leaf.

Key words*: anticholinergic effect, Datura stramonium, light microscopy analysis, optical microscope, tropane alkaloids.*

P.III.7. PROMISING BIOFERTILISING ENDOPHYTES AS HUMAN PATHOGENS SUPPRESSOR AGENTS

Oana-Alina BOIU-SICUIA[1, 2], Radu-Cristian TOMA[1], Camelia-Filofteia DIGUȚĂ[1], Călina Petruța CORNEA[1]

[1]University of Agronomic Sciences and Veterinary Medicine of Bucharest, Faculty of Biotechnologies, 59 Mărăști Blvd, District 1, Bucharest, Romania
[2]Research and Development Institute for Plant Protection, 8 Ion Ionescu de la Brad Blvd, District 1, Bucharest, Romania

Corresponding author email: radu.toma@biotehnologii.usamv.ro

Abstract

Despite the very good consideration regarding organic products, studies have shown that leafy vegetables can harbour various human pathogens. Preventive methods are the best way to reduce such risks and protect the quality and image of organic agricultural production. The aim of this study was to suppress important human pathogens, bacteria, and yeasts, by using selected plant beneficial endophytes. Results have showed that among 23 bacterial endophytes isolated from different plant species, some isolates revealed antimicrobial activity. Reference strains of Bacillus cereus and methicillin-sensitive Staphylococcus aureus were inhibited by 34.8% of the isolated endophytes, while the methicillin-resistant strain of S. aureus was inhibited by 30.4% of the tested endophytes. Enterococcus faecalis and Salmonella typhimurium were more reticent, and only 8.7% of the isolated endophytes were able to inhibit their growth. The pathogenic reference yeasts, Candida albicans and C. parapsilosis were inhibited by 17.4% and 21.7% respectively of the isolated endophytes. In vitro results revealed certain strains of endophytic bacteria as potential inoculants, to provide not only plant growth promotion but also protection against important pathogenic contaminants.

Key words*: antimicrobial activity, endophytes, human pathogens.*

SUBSECTION IV: ENVIRONMENTAL BIOTECHNOLOGY

P.IV.1. SALT STRESS ON COAST WETLAND PLANTS

Adrian SAPIÑA, Mario RUIZ, Óscar VICENTE, Mónica BOSCAIU

Universidad Politécnica de Valencia, Camino de Vera, Valencia, Spain

Corresponding author email: maruigon@upvnet.upv.es

Abstract

Coast westlands provide ecosystem services of great importance to man, but are strongly threatened by pollution, invasive species, habitat degradation and, especially, the effects of climate change. Among the latter, drought and salinization are those with the greatest impact on plants. This is relevant when dealing with sensitive and valuable ecosystems, where, in addition, numerous endemic and threatened species inhabit. Thus, as a consequence of the change in abiotic conditions, the species most sensitive to salt may become extinct and new species more tolerant to salt may invade these habitats, destabilizing the ecosystem balance. The investigation of the mechanisms of tolerance to abiotic stress, in combination with the characterization of the biotic interactions of halophytic and non-halophytic species typical of wetlands, will provide valuable information on the resilience capacity of these ecosystems, as well as for their management.

Key words*: climate change, abiotic stress, salt tolerance, Poaceae, coast westlands.*

P.IV.2. BIOLOGICAL METHODS FOR METALLIC NANOPARTICLES SYNTHESIS

Cristina FIRINCĂ, Mariana CONSTANTIN, Iuliana RAUT, Raluca BUNGHEZ, Ana Maria GURBAN, Gelu VASILESCU, Mihaela DONI, Raluca SENIN, Nicoleta RADU, Luiza JECU

INCDCP - ICECHIM, 202 Splaiul Independentei, District 6, 060021, Bucharest, Romania

Corresponding author email: jecu.luiza@icechim.ro

Abstract

Abstract Nanoparticles could be prepared through physical, chemical, and biological methods. The limitations of physical and chemical methods referring to the use of harmful chemicals and high temperature of process led to the development of biological strategies which produce stable and therapeutically active nanoparticles. Within the framework of projects PN 23.06.01/2023 and PN-III-P2-2.1-PED-2021-1942/contract no 662/2022– AMI-FOOD, the investigation was focused on the synthesis of metallic nanoparticles by suitable microorganisms. Different experimental variants were tested, the aqueous extracts from microbial culture being externally added to metal salt to form nanoparticles. The synthesized nanoparticles have been characterized by UV-VIS spectroscopy, scanning electronic microscopy (SEM), dynamic light scattering (DLS) and Fourier Transform Infrared (FTIR) spectroscopy. The antimicrobial activity of nanoparticles was tested against several pathogens in agar disc diffusion method. The results indicated that NPs obtained via mycogenesis could contribute to the development of suitable applications in various domains.

Key words*: nanotechnology, nanoparticles, mycogenesis.*

P.IV.3. NITRIFYING BACTERIA AND ITS ECOLOGICAL IMPACT ON THE SOIL

Cristina FIRINCĂ, Iuliana RĂUT, Mariana CONSTANTIN, Lucian-Gabriel ZAMFIR, Ana-Maria GURBAN, Gelu VASILESCU, Mihaela DONI, Nicoleta RADU, Luiza JECU

[1]INCDCP-ICECHIM, 202 Splaiul Independenței, District 6, 060021, Bucharest, Romania

Corresponding author email: jecu.luiza@icechim.ro

Abstract

Nitrifying bacteria, ubiquitous in soil, waters and sewage treatment systems, are responsible for maintaining soil fertility. They play a significant role in the nitrogen cycle and protect the environment against high concentrations of ammonia. In the absence of these bacteria, ammonia increases toxicity in the environment, affecting the quality of life. In agriculture based on chemical fertilizers, uncontrolled nitrification leads to inefficient use of nitrogen by crops, thus increasing the amount of nitrogen released into the environment. Therefore, nitrite contamination of underground and surface waters is the major concern. In soil, microorganisms control the fluctuation of nitrite concentration and the nitrification process in natural ecosystems is much lower compared to agricultural crops. The purpose of the study is to isolate nitrifying species from different soil samples, with an important role in supplying nitrogen to plants and limiting the fixation of carbon dioxide. `This work was carried out through the PN 23.06 Core Program - ChemNewDeal within the National Plan for Research, Development and Innovation 2022-2027, developed with the support of Ministry of Research, Innovation, and Digitization, project no. PN 23.06.01.01.`

Key words*: nitrifying bacteria, nitrification, wastewater treatment.*

SUBSECTION V: MISCELLANEOUS

P.V.1. PROTEIN-PROTEIN INTERACTION ANALYSIS OF CADHERIN ENZYME IN *DROSOPHILA MELANOGASTER*

Samin SEDDIGH

Department of Plant Protection, College of Agriculture, Varamin-Pishva Branch, Islamic Azad University, Varamin, Iran

Corresponding author email: samin.seddigh@gmail.com

Abstract

Cadherins are molecules that use calcium to attach to other cadherins on the outside of cells, forming a type of adhesive bond. They help cells communicate with each other in different processes such as extravasation, trafficking, immune surveillance, wound healing, tumor metastasis and tissue localization. In this study, the Drosophila melanogaster cdh protein (Accessiom number: NP_476722) was used as a representative for insect specimens to predict interacting proteins by STRING 10.0 database. It is designed to locate interactions between genes/proteins and is known as the Search Tool for the Retrieval of Interacting Genes/Proteins. STRING is a repository of documented and anticipated protein interactions, comprised of data from various sources such as experimental databases, computational prediction techniques, and public text collections. Analysis of protein-protein interactions revealed seven KEGG pathways: Notch signaling pathway, Wnt signaling pathway, mTOR signaling pathway, Hedgehog signaling pathway, Endocytosis, FoxO signaling pathway and Jak-STAT signaling pathway. Additionally, ten biological processes were identified, such as the morphogenesis of anatomical structures, tissue development, epithelium development, cell surface receptor signaling pathways, regulation of developmental processes, organ morphogenesis and development, and morphogenesis and development of epithelial tubes.

Key words*: Cadherin, Drosophila melanogaster, protein-protein interaction, STRING.*

P.V.2. IMPROVEMENT OF SWEET PEPPER (*CAPSICUM ANNUUM* L.) LANDRACES BY HYBRIDIZATION TO INTRODUCE VIRUS RESISTANCES AND ADAPTATION TO LOW INPUT FARMING

Marisa JIMÉNEZ PÉREZ, Estela MORENO PERIS, Ana María ADALID MARTÍNEZ, Ana FITA, Adrián RODRÍGUEZ BURRUEZO

COMAV Institute - Universitat Politècnica de València, Camino de Vera, s/n, Valencia, Spain

Corresponding author email: majipe1@posgrado.upv.es

Abstract

Pepper mild mottle virus (PMMoV) and Tomato spotted wilt virus (TSWV) produce important economic losses in agriculture. Thus, four hybrids were developed using four sweet pepper landraces, Valenciano type (BGV-10582, BGV-5121, BGV-5103, BGV-5126) and a breeding line (L277) with L4 and Tsw genes. Genotypes were evaluated under organic farming in Valencia. Yield per plant and flesh thickness were measured, as well as ascorbic (AA) and dehydroascorbic acid (DHA) contents by HPLC. Significant differences in yield per plant were not found between hybrids and their corresponding landraces. Flesh thickness was statistically higher in BGV-10582x277 than BGV-10582, whereas it was lower in BGV-5121x277 compared to BGV-5121. AA showed a statistical increase in BGV-5121x277 respect to BGV-5121, but DHA was significantly lower in some hybrids compared to their landraces. Similarities between hybrids and their corresponding landraces in several traits indicate that a few backcrosses would be enough to develop improved Valencian peppers for TSWV and PMMoV. *Thanks to the AEI, project PID2019-110221RR-C32; the grant CIPROM/2021/020 (GVA) and the grant of M. Jiménez (M.Universities, FPU20/03486).*

***Key words**: ascorbic acid, organic farming, pepper landraces, PMMoV, TSWV.*

P.V.3. BIODEGRADATION OF PLASTIC POLLUTANTS AND IDENTIFICATION OF MICROORGANISMS CAPABLE OF DEGRADING PLASTIC POLLUTANTS: REVIEW

Andreea TUDOR (DUMITRU)

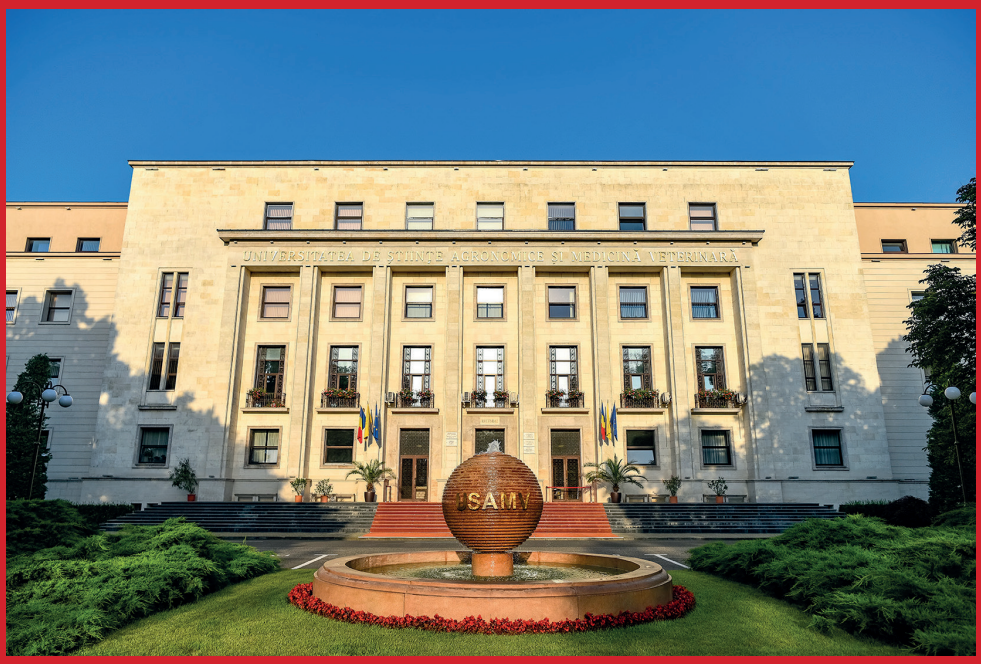
[1]University of Agronomic Sciences and Veterinary Medicine of Bucharest, 59 Mărăşti Blvd, District 1, Bucharest, Romania

Corresponding author email: eea.tudor@gmail.com

Abstract

Plastic can be a good solution for the industry and, even if plastic products might be designed and produced for circular usage, conventional methods production of it and waste management are not reliable solutions anymore. Plastic pollution became a very serious problem for the environment around the world today. Several studies shown us that microplastic is a very dangerous form of pollution and increasing amounts of it can be found in animals and human's bodies. However, recent studies provide us important data about the involvement of microorganisms in biodegradation of polymer materials. Biodegradation process is based on the ability of some microorganisms to degrade certain plastic pollutants through their metabolic activity. Many microorganisms have the ability to secrete specific degradation enzymes that participates in degrading processes of plastic. In this review we discuss about various microorganisms and their role in plastic degradation. We review different types of approaches and applications of molecular biology used for identifying microorganisms capable of degrading polymers and key genes involved in polymers degradation.

Key words*: biodegradation, pollution, microorganism, polymers, molecular biology.*



ISSN 2343 – 9653
ISSN-L 2343 – 9653