”Dunărea de Jos” University of Galați

Scientific Conference of Doctoral Schools

Perspectives and challenges in doctoral Research

14th Edition of SCDS-UDJG

11th and 12th of June 2026

BOOK OF ABSTRACTS

UNIVERSITAS GALATIENSIS

Dunărea de Jos" University of Galați

DOCTORAL SCHOOL OF FUNDAMENTAL SCIENCES AND ENGINEERING

Scientific Conference of Doctoral Schools

Perspectives and challenges in doctoral Research

14th Edition of SCDS-UDJG

11th and 12th of June 2026

BOOK OF ABSTRACTS

CONFERENCE CHAIR

Gabriela RÂPEANU – President of the Council for Doctoral Studies of UDJG (CSUD-UDJG)

INTERNATIONAL SCIENTIFIC COMMITTEE

Irinel POPESCU, “Dunarea de Jos” University of Galati, Romania
Gerassimos A. ATHANASSOULIS, Technical University of Athens, Greece
Victor Alexander TIBERIUS, University of Potsdam, Germany
Yogesh DWIVEDI, Swansea University, Wales, UK.
Domingo Ribeiro SORIANO, Universitat de València, Spain
Aurel NECHITA, “Dunarea de Jos” University of Galati, Romania
Gabriela BAHRIM, “Dunarea de Jos” University of Galati, Romania
Mariana BERNARDINO, University of Lisbon, Portugal
Alin Laurenţiu TATU, “Dunarea de Jos” University of Galati, Romania
Polidor-Paul BRATU, Academy of Technical Sciences of Romania, Romania
Andreas BUND, Technical University Ilmeneau, Germany
Cătălin FETECĂU, “Dunarea de Jos” University of Galati, Romania
Bart VAN DER BRUGGEN, Catholic University of Leuven, Belgium
Leandru Gheorghe BUJOREANU, Gheorghe Asachi Technical University of Iasi, Romania.
Nicolae BUZBUCHI, Constanta Maritime University, Romania
Ionel CÂNDEA, Romanian Academy, Romania
Daniel CONDURACHE, Gheorghe Asachi Technical University of Iasi, Romania
Victor CRISTEA, “Dunarea de Jos” University of Galati, Romania
Antoaneta ENE, “Dunarea de Jos” University of Galati, Romania
Elvira FORTUNATO, New University of Lisbon, Portugal
Yordan GARBATOV, University of Lisbon, Portugal
Adinel GAVRUS, National Institute of Applied Sciences of Rennes, France
Anton HADAR, University "Politehnica" of Bucharest, Romania
Ionel MANGALAGIU, ”Al. I. Cuza” University, Iasi, Romania.
Rodrigo MARTINS, New University of Lisbon, Portugal.
Michael METZELTIN, University of Vienna, Austria
Andreas MUSOLFF, University of East Anglia, Norwich, UK
Viorica MUȘAT, “Dunarea de Jos” University of Galati, Romania
Cristian NICHITA, University of Le Havre, France.
Khalil MD NOR, University of Technology, Malaysia
Aurel NECHITA, “Dunarea de Jos” University of Galati, Romania
José Luis PÉREZ-DIAZ, Universidad de Alcalá, Spain
Natasa POKLAR ULRIH, University of Ljubljana, Slovenia
Cristian PREDESCU, University "Politehnica" of Bucharest, Romania.
Domingo RIBEIRO SORIANO, Valencia University, Spain
Boris RUBINSKY, University of California at Berkeley, USA

Roxana SÂRBU, Academia de Studii Economice, Bucharest, Romania
Monica SIROUX, INSA, Strasbourg, France
Elena-Brânduşa STEICIUC, “Stefan cel Mare” University, Suceava, Romania
Daniela TARNIȚĂ, University of Craiova, Romania
Ion VISA, “Transilvania” University, Brasov, Romania
Xiaoshuan ZHANG, China Agricultural University, China
Elena ZUBCOV, Institute of Zoology, Academy of Sciences, Republic of Moldova
Petru NICULIȚĂ, The Academy of Agricultural and Forestry Sciencesz
Tiberiu IANCU, King Michael I University of Life Sciences of Timișoara
Stejarel BREZULEANU, Ion Ionescu de la Brad University of Life Sciences of Iași
Horațiu Felix ARION, University of Agricultural Sciences and Veterinary Medicine of Cluj-Napoca
Adrian Turek RAHOVEANU, University of Agronomic Sciences and Veterinary Medicine of Bucharest

ORGANIZING COMMITTEE

Eugen RUSU	Daniela Laura BURUIANĂ	Adrian MICU
Luminița MORARU	Elena MEREUȚĂ	Mihaela NECULIȚĂ
Nicoleta IFRIM	Iuliana APRODU	Cristian Dragoş OBREJA
Dana TUTUNARU	Mihaela Liliana MOGA	Nicoleta BOGATU

SECTIONS COMMITTEE

Section 3. Progress in Food Science and Bio-resources Engineering

SCIENTIFIC COMMITTEE	ORGANIZING COMMITTEE
Iuliana APRODU	Lorena DEDIU
Gabriela BAHRIM	Petronela NECHITA
Iuliana BANU	Violeta NOUR
Daniela BORDA	Maria TURTOI
Nicoleta STĂNCIUC	Camelia VIZIREANU

CONFERENCE PROGRAMME

THURSDAY – June 11, 2026

08:00-10:00	Invited plenary lectures
09:00-11:00	Participants registration
10:00-13:00	Invited lectures Oral presentations in concurrent sections
13:00-14:00	Lunch (building D - 1st floor)
14:00-16:00	Oral presentations in concurrent sections
16:00-16:30	Coffee break (building D - 1st floor)
16:00-18:00	Oral presentations in concurrent sections
18:00	Cultural evening

FRIDAY – June 12, 2026

09:00-10:30	Oral presentations in concurrent sections
10:30-11:00	Coffee break (building D - 1st floor)
11:00-13:00	Posters session
11:00-13:00	Workshop
13:00-14:00	Awarding ceremony. Closing ceremony
14:00-15:00	Lunch (building D - 1st floor)

TABLE OF CONTENTS

2.ORAL PRESENTATIONS

SECTION 3: PROGRESS IN FOOD SCIENCE AND BIO-RESOURCES ENGINEERING

OP.3.1.

FROM A WINE BYPRODUCT TO A FUNCTIONAL INGREDIENT: EXTRACTION STRATEGIES AND EVALUATION OF THE BIOACTIVITY OF COMPOUNDS FROM GRAPE POMACE

Nicoleta Balan, Silviu Mântăilă, Iuliana Aprodu, Gabriela Râpeanu, Nicoleta Stănciuc

"Dunărea de Jos" University of Galati, Faculty of Food Science and Engineering, 111 Domnească Street, RO-800201, Galati, Romania

Corresponding author: Nicoleta.Balan@ugal.ro

ABSTRACT

Red grape pomace (RGP), a major byproduct of the wine industry, represents an undervalued source of valuable bioactive compounds, particularly polyphenols with health-promoting properties. This study aimed to optimize and compare ultrasound-assisted extraction (UAE) techniques, using hydroalcoholic solvents and natural eutectic solvents (NaDES), for the recovery of polyphenols from RGP, as well as to evaluate the physicochemical characteristics, stability, and biological activity of the obtained extracts. Extraction parameters were optimized using response surface methodology, highlighting temperature, time, and solvent composition as key factors influencing yield. The optimal conditions for hydroalcoholic extraction (70% ethanol, 35°C, 22.5 min) resulted in higher values of total anthocyanin and polyphenol content, while NaDES (1:10 ratio, 60°C, 60 min) demonstrated selectivity for polar compounds and represents a more environmentally friendly alternative. Advanced chromatographic analyses revealed distinct phytochemical profiles between the two extraction systems, with ethanol providing a broader spectrum of bioactive compounds. *In vitro* simulations of gastrointestinal digestion indicated superior gastric stability for NaDES extracts; however, both types of extracts exhibited significant degradation during the intestinal phase, suggesting limited bioaccesibility. Functional assays demonstrated potent inhibitory effects on key enzymes involved in metabolic syndrome and inflammation, including α-amylase, α-glucosidase, and lipoxygenase. Mechanistic analyses performed using fluorescence spectroscopy and molecular docking confirmed stable ligand-enzyme interactions, involving both binding to the active site and allosteric mechanisms. Overall, the study highlights the potential of RGP as a sustainable source of bioactive compounds for applications in functional foods and nutraceuticals. The use of green solvents, such as NaDES, combined with optimized extraction techniques, supports the development of circular economy strategies and the valorization of compounds with antidiabetic and anti-inflammatory potential.

Key words: red grape pomace, polyphenols, ultrasound-assisted extraction, antioxidant activity, enzyme inhibition, *in vitro* digestion, bioaccesibility.

Acknowledgment: This work was supported by a grant of the Ministry of Research, Innovation and Digitization, CNCS-UEFISCDI, project number PN-IV-P1-PCE-2023-0129, within PNCDI IV.

OP.3.2.

USE OF BILBERRY AND BLACKCURRANT POMACE POWDERS AS FUNCTIONAL INGREDIENTS IN COOKIES

Ana Maria Blejan[a], Violeta Nour[b], Georgiana Gabriela Codină[c]

[a] "Dunărea de Jos" University of Galati, Faculty of Food Science and Engineering, 111 Domnească Street, RO-800201, Galati, Romaniab

[b] University of Craiova, Department of Horticulture & Food Science, 13 Al Cuza Street, 200585 Craiova, Romania

[c] "Stefan cel Mare" University of Suceava, Faculty of Food Engineering, 720229 Suceava, Romania

Corresponding author: anamariablejan11@gmail.com

ABSTRACT

The purpose of the present study was to evaluate the effects of partially replacing of wheat flour with bilberry (BIPP) and blackcurrant (BCPP) pomace powders at 2.5%, 5%, and 10% levels on dough texture and rheology and on the proximate composition, color, titratable acidity, pH, spread ratio, total phenolic content, DPPH radical scavenging activity, textural and sensory properties of cookies. BIPP showed higher protein, fiber, and water absorption capacity, while lower fat and titratable acidity as compared with BCPP was found. The incorporation of BIPP and BCPP in cookies resulted in lower protein and higher fat, fiber, and mineral contents. Dough hardness, consistency, and stiffness increased while the hardness, cohesiveness, and chewiness of the cookies were found to decrease with the increase in pomace levels. A seven-fold increase in the total phenolic content of the cookies was recorded at a 10% replacement level of wheat flour with BIPP, reaching 214.73 mg gallic acid equivalents (GAE)/100 g, while only a three-fold increase was found for 10% BCPP (90.18 mg GAE/100 g). The enrichment with BIPP and BCPP improved the sensory properties, with the 10% addition level presenting the highest acceptance. The results indicate that bilberry and blackcurrant pomace could be used as a sustainable source of fiber and bioactive compounds for adding nutritional, technological, and sensory benefits to the cookies.

Key words: dough rheology; nutritional properties; antioxidant activity; color; texture; sensory analysis.

OP.3.3.

INVESTIGATIONS ON HEMP PROTEINS ADDITION ON THE FUNCTIONAL AND RHEOLOGICAL BEHAVIOR OF THE GLUTEN-FREE FLOURS

Anca Lupu, Iuliana Banu, Ina Vasilean, Gabriela Râpeanu, Nicoleta Stănciuc, Iuliana Aprodu

”Dunărea de Jos” University of Galati, Faculty of Food Science and Engineering, 111 Domnească Street, RO-800201, Galati, Romania

Corresponding author: iuliana.aprodu@ugal.ro

ABSTRACT

The gluten-free diet was adopted by many consumers, due to the high incidence of the celiac disease and the gluten-related disorders. Considering the poor sensory characteristics of the gluten-free products and their well-known low nutritional profile, it is highly desired to identify gluten-free blends with good technological functionality and breadmaking properties, and with balanced nutritional profile. Therefore, identifying gluten-free mixtures with good technological functionality and breadmaking properties is highly desired. The objectives of the study were to characterize sorghum and quinoa flours, alone and in admixture. In addition, the flour blends were enriched with hemp proteins. The studied mixtures have high protein content, well balanced in essential amino acids. To learn more about the technological performance of the gluten-free combinations, the water and oil retention capacity profile was established. The gluten-free flours showed good water and oil retention properties, making them suitable for use as stabilizing, thickening or gelling agents in complex food matrices. The water retention and rheological characteristics of the gluten-free flours were greatly affected by the inclusion of vegetable proteins at levels that guarantee the production of bread with a high protein content. The results indicated that adding hemp proteins could enhance the sorghum-quinoa flour mixes' functioning and breadmaking qualities.

Key words: gluten-free mixtures, sorghum flour, quinoa flour, hemp proteins.

OP.3.4.

SOIL BIODEGRADATION OF BIOPOLYMER FILMS: INFLUENCE OF COMPOSITION ON DEGRADATION KINETICS AND MICROBIAL CO_2 PRODUCTION

Valentina-Elena Gorgan[a], Aida Mihaela Vasile[b], Gabriela Elena Bahrim[b], Petronela Nechita[a]

[a]"Dunărea de Jos" University of Galati, Faculty of Engineering and Agronomy, Calea Călărașilor no. 29, 810017, Brăila, România

[b]"Dunărea de Jos" University of Galati, Faculty of Food Science and Engineering, 111 Domnească Street, RO-800201, Galati, Romania

Corresponding author: valentina.gorgan@ugal.ro

ABSTRACT

The current context of the need to increase food demand worldwide has imposed the intensification of agriculture and the use of crop technologies that have not taken into account their impact on the environment, polluting, mainly with plastic materials. Recent environmental policies and strategies propose orientation towards environmentally friendly agricultural practices, which help to preserve and restore affected environments. One of the biggest pollutions is the use of mulch films made of synthetic polymers. As an alternative to these, the paper presents the development of biodegradable biopolymers as sodium alginate, nanocellulose and chitosan. The biopolymeric films were based on individual and combined formulations and were obtained by casting and layer by layer method. Six distinct recipes were developed, in order to evaluate the influence of the composition on the behavior in the soil environment. The biodegradation of the films was investigated over a period of 7, 14 and 28 days of soil burial, by monitoring the rate of degradation and the microbial activity, expressed through the production of CO_2 . The applied methodology allowed highlighting the differences between the studied formulations, depending on the type and combination of biopolymers used. The results obtained indicate significant variations in the biodegradation rate and the dynamics of CO_2 production, which are correlated with the composition of the films. The study highlights the role of formulation in controlling biodegradation processes and contributes to the development of biopolymer materials with predictable behavior in natural environments.

Key words: sodium alginate, chitosan, nanocrystalline cellulose, microbial respiration, soil biodegradation.

OP.3.5.

ACTIVE EDIBLE COATINGS ENRICHED WITH *SALVIA OFFICINALIS* SUPERCRITICAL EXTRACT: IN SITU EVALUATION OF SHELF LIFE AND ANTILISTERIAL POTENTIAL ON TELEMEA CHEESE

Ilir Mërtiri, Leontina Grigore-Gurgu, Liliana Mihalcea, Iuliana Aprodu, Mihaela Cotârleț, Mihaela Turturică, Gabriela Râpeanu, Nicoleta Stănciuc

”Dunărea de Jos” University of Galati, Faculty of Food Science and Engineering, 111 Domnească Street, RO-800201, Galati, Romania

Corresponding author: ilir_mertiri@yahoo.com

ABSTRACT

Rising concerns about the health risks associated with chemical food additives, along with consumers' increasing demand for natural alternatives, have prompted the food industry to explore safer, natural options. In this study, *Salvia officinalis* supercritical fluid extract (So-SFE) was incorporated into chitosan, gelatin and glycerol forming solution (FS) to prepare active edible coatings intended for food applications. *Listeria monocytogenes* Scott A was selected as a target microorganism, and the FS were formulated based on the Minimal Inhibitory Concentration (MIC) of the So-SFE. Bioinformatics investigation performed on SwissADME and ProTox-3.0 prediction software were focused on the absorption, distribution, metabolism, excretion, and toxicity (ADMET) of the identified compounds. The influence of the So-SFE-enriched coatings were evaluated *in situ* on Telemea cheese regarding the general microbiological profile, physio-chemical changes and antilisteral potential during 21 days of storage at refrigeration conditions. The phytochemical characterization reveled extracts rich in bioactive compounds including fatty acids, carotenoids, and polyphenols. In addition, the *in silico* analyses suggested high gastrointestinal absorption, and favorable toxicity profiles for the majority of identified phytochemical compounds. Rheological measurements showed that the formulations exhibited typical liquid-like behavior, regardless of the concentration of So-SFE tested. Investigations on Telemea cheese demonstrated that the So-SFE-enriched coatings effectively inhibited the growth of total mesophilic bacteria, yeast, and psychrophilic microorganisms under refrigeration conditions. Moreover, the coating formulations displayed a gradual antilisterial effect, achieving a reduction of 1.0 log over 21 days of storage. These findings suggest that So-SFE could be a promising natural additive for enhancing food safety and shelf life.

Key words: *Salvia officinalis*, green extraction, *Listeria monocytogenes*, antibacterial activity.

OP.3.6.

INFLUENCE OF DRYING TECHNIQUE AND EXTRACTION CONDITIONS ON THE PHENOLIC CONTENT AND ANTIOXIDANT ACTIVITY OF ARONIA POMACE

Andreea-Bianca Balint[a], Nicoleta Stănciuc[a], Iuliana Aprodu[a], Roxana Nicoleta Rațu[b], Mihaeka Skrt[c], Natasa Poklar Ulrih[c], Gabriela Râpeanu[a]

[a]"Dunărea de Jos" University of Galati, Faculty of Food Science and Engineering, 111 Domnească Street, RO-800201, Galati, Romania

[b]"Ion Ionescu de la Brad" Iasi University of Life Sciences, Faculty of Agriculture, Department of Food Technologies, 3 Mihail Sadoveanu Alley, 700489 Iasi, Romania

[c] University of Ljubljana, Biotechnical Faculty, Department of Food Science and Technology, Jaminkarjeva 101, 1000 Ljubljana, Slovenia

Corresponding author: Andreea.Balint@ugal.ro

ABSTRACT

Aronia melanocarpa pomace, obtained as the solid residue remaining after juice extraction, is an agri-food by-product with considerable potential for reuse. According to the literature, this residual fraction retains an important proportion of the fruit's bioactive constituents, particularly phenolic compounds, antioxidant substances and dietary fibre, which support both its nutritional and functional value. In the present study, *Aronia melanocarpa* pomace was stabilized by convective and infrared drying at 45°C, 55°C and 65°C, followed by controlled cooling and grinding to obtain a homogeneous powder suitable for subsequent analyses. Further, the resulting dried material was subjected to extraction. Compositional evaluation confirmed the high functional value of aronia pomace, mainly due to its rich phenolic profile. The highest recovery of phenolic compounds was observed at 55°C for both drying methods. Under these conditions, the total polyphenol content reached 98.47 ± 1.63 mg gallic acid equivalents (GAE)/g dry matter (DM) for infrared drying and 98.07 ± 2.59 mg GAE/g DM for convective drying. Similarly, the flavonoid content reached 120.42 ± 1.46 mg quercetin equivalents (QE)/g DM in the infrared-dried samples and 123.93 ± 1.97 mg QE/g DM in the convectively dried samples. Antioxidant activity also remained high, as reflected by ABTS values of 565.06 ± 9.37 mmol Trolox equivalents/100 g DM for infrared drying and 570.80 ± 7.80 mmol Trolox equivalents/100 g DM for convective drying. Overall, the results indicate that aronia pomace represents a valuable source of bioactive compounds and that both drying method and extraction conditions play an important role in determining its functional potential.

Key words: *Aronia* pomace; bioactive compounds; drying techniques; phenolic extraction; antioxidant capacity.

OP.3.7.

FROM SEAWEED TO SOLUTION: ULVA EXTRACTS AS A TOOL TO MITIGATE ANTIBIOTIC-INDUCED IMPAIRMENTS IN FISH

Alina Nicoleta Macoveiu (Dobre)[a,b] Angela Docan[a], Iulia Grecu[a], Liliana Mihalcea[a], Mirela Crețu[a], Lorena Dediu[a]

[a] "Dunărea de Jos" University of Galati, Faculty of Food Science and Engineering, 111 Domnească Street, RO-800201, Galati, Romania

[b] Institute of Research and Development for Aquatic Ecology, Fishing and Aquaculture", 54 Portului Street, Galați, Romania

Corresponding author: lorena.dediu@ugal.ro

ABSTRACT

The increasing use of antibiotics in aquaculture, as essential drugs for disease control, is frequently associated with adverse physiological effects in fish, including oxidative stress, metabolic imbalance, and immune dysfunction. The present study aimed to evaluate the potential of *Ulva lactuca* as a natural neoadjuvant to support the efficacy of antibiotic treatments-oxytetracycline (OTC) and florfenicol (FF), while attenuating their associated side effects in *Cyprinus carpio*. A 10-week feeding trial (360 fish; 20.20 ± 0.13 g) was conducted using a basal diet or an *Ulva* supplemented diet, followed by allocation into six experimental groups (C, C+FF, C+OTC, U, U+FF, U+OTC) and a 10-day antibiotic administration via feed. Growth performance, hematological indices, liver and kidney function, as well as protein and carbohydrate metabolism, were evaluated. Additionally, immune response through leukocyte profiling and lysozyme activity, and oxidative stress markers (TAC, MDA) were examined. Although *Ulva* supplementation did not significantly enhance growth, antibiotic treatments induced a clear deterioration of health status in fish fed the conventional diet, whereas fish receiving *Ulva*-supplemented feed showed improved physiological resilience, reflected by a more stable metabolic profile, reduced oxidative stress, and enhanced immune response. These findings highlight the potential of *Ulva lactuca* as a functional feed additive capable of mitigating antibiotic-induced physiological disturbances and supporting sustainable aquaculture practices.

Key words: Antibiotics, *Cyprinus Carpio*, metabolic profile, oxidative stress, *Ulva lactuca.*

OP.3.8.

SCREENING AND EVALUATION OF KEY FACTORS IN TEFF-BASED FERMENTATION USING PLACKETT-BURMAN DESIGN: EFFECTS ON PHYSICOCHEMICAL PROPERTIES AND FUNCTIONAL BIOACTIVITY

Samson Abebe Boyiza, Iuliana Aprodu, Daniela Ionela Istrati, Mihaela Cotârleț, Nicoleta Stănciuc, Camelia Vizireanu

"Dunărea de Jos" University of Galati, Faculty of Food Science and Engineering, 111 Domnească Street, RO-800201, Galati, Romania

Corresponding author: samson.abebe@ugal.ro

ABSTRACT

This research focused on the screening and evaluation of key factors influencing teff-based fermentation using the Plackett–Burman design. Teff, a nutritionally rich cereal, has gained attention for its potential in developing functional fermented foods. Seven variables (teff flour, castane, inoculum, temperature, time, agitation, and pH) were screened for their influence on antioxidant activity (expressed as ABTS and DPPH radical scavenging activities), protein content, flavonoids, polyphenols, titratable acidity, antifungal activity, and final pH. Experimental results showed substantial variation across responses, with ABTS (7.61-23.29 mM Trolox/g dry weight (DW)), DPPH (2.31-29.88 mM Trolox/g DW), protein (3.11-8.35 mg/g DW), flavonoids (1.37-3.95 mg quercetin equivalents (QE)/100 g DW)), and polyphenols (2.76-6.01 mg gallic acid equivalents (GAE)/g DW)). Antifungal activity ranged from 2.94 to 10.65% against *Aspergillus niger* and 4.35 to 17.39% against *Penicillium expansum*. Regression analysis revealed that temperature and agitation had a significant impact on antioxidant activity, while fermentation time and pH were the primary factors influencing antifungal activity. Titratable acidity was primarily governed by fermentation time and castanet addition, whereas final pH was significantly affected by time, agitation, and initial pH. The models showed high goodness of fit (R^2 up to 95.27%), although predictive performance varied among responses. Overall, fermentation time was identified as the most influential parameter. These findings demonstrate that controlled fermentation enhances the functional and bioactive properties of teff-based substrates, supporting the application in functional food development.

Key words: Teff fermentation, optimization, antioxidant activity, physicochemical properties.

OP.3.9.

REFORMULATION OF SANDWICH-TYPE PORK SALAMI USING COLLAGEN AND PLASMA PROTEINS AS SUBSTITUTES FOR SOY PROTEIN TO REDUCE ALLERGENICITY

Ramona Gheorghe (Pîrvu)[a], Georgiana Gabriela Codină[b], Violeta Nour[c]

[a] "Dunărea de Jos" University of Galati, Faculty of Food Science and Engineering, 111 Domnească Street, RO-800201, Galati, Romania

[b] "Stefan cel Mare" University of Suceava, Faculty of Food Engineering, 720229 Suceava, Romania

[c] University of Craiova, Department of Horticulture & Food Science, 13 Al Cuza Street, 200585 Craiova, Romania

Corresponding author: ramona.pirvu@teldo.ro

ABSTRACT

The present study evaluated the technological feasibility and functional performance of replacing soy protein with collagen and plasma protein, alone or in combination with selected hydrocolloids (carrageenan and xanthan) and polyphosphates. Six salami formulations were produced, including a control containing 5.28% soy protein isolate and five reformulated variants, in which soy protein isolate was fully replaced by a collagen (1.88%) and plasma protein (3.40%) system, applied either alone or in combination with κ-carrageenan (1.0%), xanthan gum (0.20%), and sodium tripolyphosphate (0.10%). A controlled comparative design was employed to assess the effects of hydrocolloid type and phosphate incorporation on product functionality. Proximate composition, collagen and hydroxyproline contents, textural properties, and sensory attributes were determined after processing. Replacement of soy protein with collagen and plasma protein significantly increased hardness, shear force, adhesiveness, cohesiveness, resilience, gumminess, and chewiness. κ-Carrageenan and sodium tripolyphosphate exerted a synergistic effect, improving water-binding capacity and emulsion stability, whereas xanthan gum reduced hardness and shear force and negatively affected sensory attributes. Overall, the results demonstrate that soy protein replacement in salami is technologically feasible when optimized combinations of collagen, plasma proteins, and κ-carrageenan-based systems are used, while xanthan gum requires careful formulation control.

Key words: pork salami; collagen; plasma protein; carrageenan; xanthan gum; polyphosphates; reformulation; sensory analysis.

OP.3.10.

APPROACHES TO THE USE OF SPORE-FORMING PROBIOTIC BACTERIA IN THE BIOTICATION OF PLANT-BASED SUBSTRATES

Marilena Oprișanu, Mihaela Cotârleț, Leontina Grigore-Gurgu, Gabriela-Elena Bahrim

”Dunărea de Jos” University of Galati, Faculty of Food Science and Engineering, 111 Domnească Street, RO-800201, Galati, Romania

Corresponding author: Marilena.Oprisanu@ugal.ro

ABSTRACT

In recent years, the controlled fermentation of plant-based substrates with spore-forming probiotics (*Bacillus* spp.) has become one of the most used approaches for obtaining biovalue-added ingredients, as valuable components in the development of functional food products. At the same time, a growing interest in tri-biotic formulations, which include prebiotics, probiotics, and postbiotics, as more stable alternatives for food and nutritional applications, has been observed. This study highlighted the main biofunctionalities incorporated into fermented products produced by single-strain *Bacillus subtilis* fermentation in media based on amaranth and adzuki flours. In this context, each of the two commercial strains of *B. subtilis* QB (QBiotic, Biometabolic Shift) and HU (Microbiome Labs), previously isolated as pure cultures from commercial products, were inoculated in a concentration of 2 % in media based on 7 % amaranth or adzuki flours (pH 6.5) and incubated in stationary conditions at 37 °C for 72 hours. The experimental results regarding the obtained fermented products reveal that the ABTS radical scavenging activity, the proteins, organic acids, and total polyphenolic contents are variable and the fermentation process with spore-forming probiotics generates specific functional profiles, in correlation with the substrate composition and metabolic particularities of the inoculum. More precisely, the antioxidant activity of the adzuki fermented samples was much higher (over 69 %) compared to that of fermented amaranth samples. Through the fermentation of amaranth flour, the protein content in the water-soluble extracts is reduced from 50.75 mg/g dry weight (DW) (control sample) to 20.61 mg/g DW (in the sample fermented with *B. subtilis* QB) due to the intense protease activities which led to increased proteins hydrolysis and release of the bioactive peptides and amino acids. Further, it was observed that, in all samples where the fermented substrate was represented by amaranth flour, significantly increased amounts of 2,3-dihydroxybenzoic, and hydroxycinnamic acids, especially caffeic and ferulic acids, compared with the control samples, were found. Furthermore, the acidic pH of ~4.0 units assessed after fermentation process was justified based on the increased organic acids (especially lactic acid) synthesis within fermentation of both flour substrates with the *B. subtilis* HU strain. These preliminary studies will be extended to focus on bioprocess optimization targeting the enhancement of bioactive properties of fermented products (biotication).

Key words: amaranth and adzuki flours, fermentation, spore-forming probiotics, *B. subtilis*, bioactive postbiotics.

OP.3.11.

PUMPKIN POMACE POWDER: A SUSTAINABLE ADDITION TO WHEY CHEESE MANUFACTURING

Roxana Ratu (Gavril)[a,b], Oana Emilia Constantin[a], Nicoleta Stănciuc[a], Iuliana Aprodu[a], Claudia Mureșan[c], Gabriela Râpeanu[a]

[a]"Dunărea de Jos" University of Galati, Faculty of Food Science and Engineering, 111 Domnească Street, RO-800201, Galati, Romania

[b]"Ion Ionescu de la Brad" University of Life Sciences of Iasi, Faculty of Agriculture, Department of Food Technologies, 3 Mihail Sadoveanu Alley, 700489 Iasi, Romania

[c]"Aurel Vlaicu" University of Arad, Faculty of Food Engineering, Tourism and Environmental Protection, 2 Elena, Dragoi Street, RO-310330, Arad, Romania

Corresponding author: roxana.ratu@iuls.ro

ABSTRACT

In the context of the development of functional dairy products using natural ingredients from agri-food by-products, this study investigated the potential of pumpkin pomace powder as a bioactive ingredient for obtaining a whey cheese enriched with compounds with high nutritional value. Pumpkin pomace, resulting from pumpkin processing, is a valuable source of dietary fiber, carotenoids, polyphenols, and minerals. In the experiment, pumpkin pomace powder was incorporated into whey cheese in proportions of 3% and 6%, and the effects on the physicochemical composition, phytochemical profile, color, texture, microstructure, and sensory properties were evaluated. The results revealed a significant increase in the content of carotenoids in the enriched samples, from 38.14 ± 0.91 to 76.41 ± 1.28 mg/100 g dry weight (DW), of total polyphenols, from 45.44 ± 2.66 to 82.83 ± 2.87 mg gallic acid equivalents (GAE)/ g DW, and antioxidant activity, from 470.25 ± 4.15 to 977.41 ± 6.96 µmol TE/g DW. The addition of powder also established the nutritional composition of the whey cheese, resulting in increases in protein content (10.35–10.74%), fiber (3.32–5.04%), ash (1.90–2.98%), and energy value (104.66–117.98 Kcal/100 g). From a colorimetric point of view, the addition of powder reduces brightness (L* from 94.60 to 80.27) and intensifies yellow-orange shades (b* from 11.56 to 21.10), giving a more attractive appearance. Sensory analysis showed that the 3% powder variant was the most accepted by consumers, maintaining favorable sensory characteristics and a creamy texture. In conclusion, pumpkin pomace powder can be successfully used as a bioactive ingredient in the manufacture of whey cheese, contributing both to increasing the nutritional and functional values of the product and to the sustainable valorization of by-products in the food industry.

Key words: pumpkin pomace, bioactive powder, carotenoids, polyphenols, antioxidant activity, whey cheese, valorization of agri-food by-products.

OP.3.12.

ECOTOXICOLOGICAL EFFECTS OF BOSCALID ON EARLY DEVELOPMENTAL STAGES OF *CARASSIUS AURATUS*

Daniela-Nicoleta Ropotan[a], Carmen Lidia Chițescu[b], Iulia Rodica Grecu[a], Angelica Docan[a], Lorena Dediu[a]

[a]"Dunărea de Jos" University of Galati, Faculty of Food Science and Engineering, 111 Domnească Street, RO-800201, Galati, Romania

[b]"Dunărea de Jos` University of Galati, Faculty of Medicine and Pharmacy, Alexandru Ioan Cuza Street, No. 35, RO-800216, Galati, Romania

Corresponding author: daniela.ropotan@ugal.ro

ABSTRACT

The present study aims to evaluate the *in vivo* toxicity of boscalid on the early developmental stages of calico long-finned goldfish (*Carassius auratus*), emphasizing integrated physiological responses. The experimental design consists of the exposure of the fertilized eggs to a range of environmentally relevant concentrations of the test substance, specifically from 0.05 to 1.0 mg/L, alongside the control group (0.0 mg/L), following the OECD Test Guideline No. 210. Therefore, the design ensures the assessment of the sublethal effects of the varying concentration levels, including the embryonic developmental progression, the identification of morphological abnormalities, and the evaluation of some biochemical biomarkers associated with oxidative stress, including lipid peroxidation (MDA/TBARS), total protein content, glutathione levels, and catalase activity. The early oxidative damage was detected at the lower concentrations (0.05–0.1 mg/L), while higher concentrations (0.5–1.0 mg/L) capture morphological, behavioral, and systemic effects. Overall, this study contributes to a better understanding of boscalid's ecological risks and supports the knowledge regarding the necessity of more sustainable pesticide management strategies in aquatic environments.

Key words: boscalid, early-life stage toxicity, sublethal effects, calico goldfish.

OP.3.13.

PRELIMINARY CHARACTERIZATION OF POLYPHENOLS AND ANTIOXIDANT ACTIVITY OF *PORTULACA OLERACEA* EXTRACTS OBTAINED BY MICROWAVE-ASSISTED EXTRACTION

Nicoleta Mustață, Oana - Viorela Nistor, Gigi Coman, Liliana Mihalcea

"Dunărea de Jos" University of Galati, Faculty of Food Science and Engineering, 111 Domnească Street, RO-800201, Galati, Romania

Corresponding author: Liliana.Gitin@ugal.ro

ABSTRACT

Portulaca oleracea belongs to *Portulacaceae* family that counts more than 100 species worldwide. *P. oleracea* has a great potential for application in food, medicine and cosmetic fields due to the phytochemical profile. Moreover, due to its ability to grow in soils burdened with anthropogenic activities, the plant induces tolerance to abiotic stresses. In this study, a genotype included in the breeding program of the Plant Genetic Resources Bank for Vegetable, Floriculture, Aromatic, and Medicinal Plants was used to perform microwave-assisted extraction of bioactive compounds. Three different solvents were analyzed at different microwave powers in order to evaluate the polyphenols content and antioxidant activity. The results indicated a strong correlation of total polyphenols content (maximum concentration of 25 ± 0.29 mg gallic acid equivalents (GAE)/100 g dry weight (DW)) and the antioxidant activity (56.95 ± 0.99% of DPPH inhibition) for the aqueous extract obtained by microwave-assisted extraction at 270 W for 10 s. Total polyphenol content was higher in the extracts obtained with 70% ethanolic solution at 270 W for 10 s. The pure ethanol was less effective to extract polyphenols from *P. oleracea.*

Key words: phenolic compounds, flavonoids, antioxidant activity, microwave assisted extraction, ultrasound assisted extraction.

OP.3.14.

THE INTEGRATION OF ADAPTIVE AND DYNAMIC FOOD SAFETY SYSTEMS INTO THE SETTING OF FOOD SAFETY OBJECTIVES IN THE BAKERY INDUSTRY

Delia Mihaela Onea, Loredana Dumitrascu, Daniela Borda

”Dunărea de Jos” University of Galati, Faculty of Food Science and Engineering, 111 Domnească Street, RO-800201, Galati, Romania

Corresponding author: Daniela.Borda@ugal.ro

ABSTRACT

The bakery industry faces significant microbiological risks, generated by constant variations in process parameters (temperature, humidity, time) during the proofing, baking and cooling stages. Traditional food safety management systems, based on static HACCP plans, have a rather rigid and reactive approach. This review article analyses how adaptive and dynamic food safety systems – supported by IoT technologies, smart sensors and artificial intelligence (AI/ML) – can be integrated into the setting and achievement of food safety objectives, in accordance with the IFS Food standard version 8. The article demonstrates how continuous monitoring, AI-based predictive analytics and the automatic adjustment of critical control points (CCPs) can transform food safety objectives into a dynamic, measurable process that is fully integrated with the prescriptive requirements of IFS Food v8, including those relating to the development and assessment of food safety culture. The analysis is based on recent scientific literature (2023–2026) and the official text of the IFS Food version 8 standard.

Key words: adaptive and dynamic food safety systems, IFS Food version 8, dynamic food safety objectives, food safety culture, bakery, Food Safety 4.0, smart packaging, biosensors.

OP.3.15.

RESPONSE SURFACE METHODOLOGY FOR IMPROVING THE FUNCTIONAL PROPERTIES OF FERMENTED *CANNABIS SATIVA* L. SEEDS

Virginia Tanase Apetroaei, Mihaela Cotârleț, Daniela Ionela Istrati, Eugenia Mihaela Pricop, Gabriela Elena Bahrim, Camelia Vizireanu

"Dunărea de Jos" University of Galati, Faculty of Food Science and Engineering, 111 Domnească Street, RO-800201, Galati, Romania

Corresponding author: Virginia.Tanase@ugal.ro

ABSTRACT

In this study, Response Surface Methodology (RSM) was applied to optimize the semi-solid fermentation (S-SSF) of dehulled hemp seeds (*Cannabis sativa* L.) as the main substrate, supplemented with okara and date syrup, to maximize the functional properties. This optimization step was conducted following preliminary screening using the Plackett–Burman design, which enabled the identification of significant variables influencing the fermentation process. For optimization, a central composite design (CCD) was employed to evaluate the combined effects of three key factors, such us: the concentration of dehulled hemp seeds (*Cannabis sativa* L.), the concentration of date syrup, and the concentration of the starter culture (water kefir grains). The investigated ranges were: hemp seeds (5–15%, w/w), date syrup (1–3%, w/w), and water kefir grain inoculum (0.10–0.50%, w/w), while temperature (30 °C), fermentation time (48 h), and okara content (2%, w/w) were kept constant. For standardization, the pH was adjusted to 6.50, followed by autoclaving at 121°C for 15 minutes. The samples were then inoculated and fermented according to the experimental matrix. The RSM approach, based on a three-factor and five-level design, allowed the assessment of both individual and interaction effects of the independent variables on the bioactive characteristics of the fermented products. The optimization targeted multiple responses, including total titratable acidity (TTA), antioxidant activity (ABTS and DPPH), soluble protein content (SPC), total phenolic content (TPC), total flavonoid content (TFC), and antifungal activity against *Penicillium expansum* MIUG M11. The model predicted optimal conditions consisting of 15% dehulled hemp seeds, 4.9% date syrup, 1% starter culture, 48 h fermentation time at 30°C, and stationary conditions, achieving a high overall desirability (0.982). Under these conditions, the obtained values were 20.96 mL NaOH (0.1 N) for titratable acidity, 16.70 mg/g dry weight (DW) for soluble protein content, 3.15 mg gallic acid equivalents (GAE)/g DW for total phenolic, 2.49 mg catechin equivalents (CE)/g DW for total flavonoids, ABTS radical scavenging of 65.08% and 57.84% for DPPH, and 20.00% antifungal inhibition. Validation experiments confirmed the accuracy of the model, with all responses falling within the 95% confidence interval. The results demonstrate that RSM is an effective tool for optimizing fermentation processes and highlight the synergistic role of substrate composition and microbial activity in enhancing the functional properties of fermented products based on dehulled hemp seeds (*Cannabis sativa* L.).

Key words: hemp seeds, *Cannabis sativa* L., S-SSF fermentation, optimization, Response Surface Methodology, antioxidant activity, bioactive properties.

3.POSTERS

SECTION 3: PROGRESS IN FOOD SCIENCE AND BIO-RESOURCES ENGINEERING

PP.3.1.

HOT AIR CONVECTIVE AND INFRARED DRIED PROBIOTIC RED GRAPE POMACE: PHYTOCHEMICAL AND PHYSICO-CHEMICAL PROPERTIES OF THE POWDERS

Larisa Anghel, Gabriel Danuț Mocanu, Gabriela Râpeanu, Nicoleta Stănciuc

”Dunărea de Jos” University of Galati, Faculty of Food Science and Engineering, 111 Domnească Street, RO-800201, Galati, Romania

Corresponding author: anghellarisa98@yahoo.com

ABSTRACT

The red grape pomace (RGP), a major by-product of the winemaking industry is considered as a valuable resource due to its high content of bioactive compounds with significant health benefits. Drying plays a crucial role in stabilizing vegetal materials, enabling storage, transport, and reuse, while supporting circular economy principles and reducing environmental impact. In this study, the RGP inoculated with lactic acid bacteria was dried using two techniques, such as convective air and infrared drying. The study further investigates the phytochemical and physicochemical properties of the resulting powders, demonstrating their potential as functional ingredients and nutraceuticals. Infrared drying proved to be more efficient than convective drying in preserving polyphenols, anthocyanin’s, probiotic viability, and antioxidant activity, mainly due to the higher dehydration rate. Convective dried powders exhibited higher moisture and carbohydrate content, lower density, and larger particle size, resulting in more open and porous structures. Both powders demonstrated good flowability, cohesiveness, and high porosity, while infrared-dried samples showed superior water-holding capacity, with similar oil-holding and swelling capacities for both methods. Overall, the results confirm that dried, probiotic-enriched grape pomace powders are stable, bioactive-rich ingredients with strong potential for applications in functional foods, supplements, and nutraceuticals.

Key words: red grape pomace, probiotics, drying, properties.

PP.3.2.

IN VITRO EVALUATION OF LACTICASEIBACILLUS CASEI SSP. PARACASEI VIABILITY AND OF ANTHOCYANINS FROM DRIED RED GRAPE POMACE

Larisa Anghel, Gabriel Danuț Mocanu, Gabriela Râpeanu, Nicoleta Stănciuc

”Dunărea de Jos” University of Galati, Faculty of Food Science and Engineering, 111 Domnească Street, RO-800201, Galati, Romania

Corresponding author: anghellarisa98@yahoo.com

ABSTRACT

In this study, the convective air (CD) and infrared (IR) dried powders, inoculated with *Lacticaseibacillus casei* ssp. *paracasei* were tested for *in vitro* cell viability and anthocyanins stability. The powders showed an anthocyanin content of 388.71±1.47 µg cyanidin-3-glucosides equivalents (C3G)/g dry weight (DW) in IR dried powder and 154.17±1.01 µg C3G/g DW in CD dried powder. The powders showed a content of 10^8 cfu/g dry weight (DW). During *in vitro* digestion, the total anthocyanins content showed a constant level in both powders when compared with oral phase, at levels of 5.05±0.71 µg C3G/g dry DW in infrared powders and 6.30±0.29 µg C3G/g DW in CD powders, after 120 min of gastric digestion. The increase in anthocyanins content was found in simulated intestinal juice after 120 min of digestion of 8.43±0.31 µg C3E/g DW in IR and 10.82±0.13 µg C3G/g DW in CD powders, indicating an increase with approximatively 67% an 3% for both powders. These may be explained by higher degradation rate of anthocyanin at pH 7.0, due to the metabolization of anthocyanin to anthocyanidin by the removal of sugars in the intestine, followed by degradation to smaller compounds, such as protocatechuic acid and ferulic acid. Regarding the *in vitro* lactic acid bacteria cells viability, the results showed a good stability in oral and gastric phase (decrease with 0.5 log CFU/g DW) and a decrease with 1.0 log in the intestinal environment in both powders. Therefore, the results confirm that dried, probiotic-enriched red grape pomace powders are a valuable source of stable, enriched in bioactive and viable cells, with improved bioaccesibility.

Key words: red grape pomace, probiotics, cell viability, *in vitro* digestion.

PP.3.3.

SUSTAINABLE VALORISATION OF *ARONIA MELANOCARPA* POMACE AS A SOURCE OF BIOACTIVE COMPOUNDS

Andreea-Bianca Balint[a], Nicoleta Stănciuc[a], Iuliana Aprodu[a], Roxana Nicoleta Rațu[b], Mihaeka Skrt[c], Natasa Poklar Ulrih[c], Gabriela Râpeanu[a]

[a]"Dunărea de Jos" University of Galati, Faculty of Food Science and Engineering, 111 Domnească Street, RO-800201, Galati, Romania

[b]"Ion Ionescu de la Brad" Iasi University of Life Sciences, Faculty of Agriculture, Department of Food Technologies, 3 Mihail Sadoveanu Alley, 700489 Iasi, Romania

[c] University of Ljubljana, Biotechnical Faculty, Department of Food Science and Technology, Jaminkarjeva 101, 1000 Ljubljana, Slovenia

Corresponding author: andreea.balint@ugal.ro

ABSTRACT

The valorization of agri-food by-products has become a priority within circular economy strategies and sustainable production systems, particularly in response to the need to reduce waste and recover high-value compounds from plant-derived residues. In this context, *Aronia melanocarpa* pomace, obtained as a by-product of juice processing, stands out as a highly valuable plant matrix. Although it is still frequently underutilized or directed towards low-value applications, this secondary fraction retains considerable amounts of bioactive constituents, which explains the growing scientific and technological interest in its exploitation. The fruits of *Aronia melanocarpa* are characterized by a remarkable phytochemical composition, including high concentrations of polyphenols, anthocyanins, proanthocyanidins, flavonols and phenolic acids, together with vitamins, minerals, organic acids, sugars and dietary fibre. As a result of processing, a substantial proportion of these compounds remains in the pomace, which consists of peel, residual pulp and seeds and may represent approximately 10–35% of the initial fruit mass. This by-product is an important source of polyphenolic compounds, particularly anthocyanins, flavonols, tannins and phenolic acids. Anthocyanins are considered the main contributors to its antioxidant activity, while other phenolic constituents may also support antibacterial effects. Owing to this rich bioactive profile, aronia pomace has attracted increasing attention as a secondary plant resource with high functional potential, suitable for the recovery of natural ingredients rich in antioxidants, pigments and dietary fibre for food, nutraceutical, pharmaceutical and cosmetic applications. Therefore, the increasing research focus on aronia pomace is justified both by the need to reduce waste generated by the juice industry and by the potential of this raw material to provide bioactive compounds for innovative and sustainable applications. From this perspective, *Aronia melanocarpa* pomace represents a promising source for the development of functional products and for the broader use of natural compounds in several applied fields.

Key words: *Aronia melanocarpa*, pomace, bioactive compounds, valorization, antioxidants.

PP.3.4.

EFFECT OF *LACTOBACILLUS PLANTARUM* FERMENTATION AND SUBSTRATE FORTIFICATION ON ANTIOXIDANT, PHYSICOCHEMICAL, AND ANTIFUNGAL PROPERTIES OF TEFF-BASED SYSTEMS

Samson Abebe Boyiza, Iuliana Aprodu, Daniela Ionela Istrati, Mihaela Cotârleț, Nicoleta Stănciuc, Camelia Vizireanu

”Dunărea de Jos” University of Galati, Faculty of Food Science and Engineering, 111 Domnească Street, RO-800201, Galati, Romania

Corresponding author: samson.abebe@ugal.ro

ABSTRACT

This study evaluated the impact of *Lactiplantibacillus plantarum* fermentation and substrate fortification (banana flour and okara) on the functional and bioactive properties of teff-based formulations. Fermentation significantly reduced the pH values (final pH varied from 3.19 to 3.48) and increased titratable acidity (TTA) (31.9-34.8 (0.1 N/100 g)) compared to controls (pH up to 5.86; TTA up to 58.6 (0.1 N/100 g)), confirming active acidification. Antioxidant activity showed variable trends: ABTS radical scavenging activity ranged from 36.86 to 60.49 mM Trolox/g DW, with the highest value observed in unfermented banana-enriched samples, while DPPH radical scavenging activity was generally enhanced in fermented samples (17.9-18.7 mM Trolox/g DW). Protein content increased notably in fermented okara samples (up to 5.08 mg/g DW), whereas flavonoids and polyphenols showed slight increase, particularly in banana-fortified fermentation (flavonoids of 1.52 mg quercetin equivalents (QE)/100 g DW and polyphenols of 2.19 mg gallic acid equivalents (GAE)/g DW)). Antifungal activity was strongly influenced by fermentation, with the highest inhibition observed against *Aspergillus niger* (33.33%) and *Penicillium expansum* (21.74%) in *L. plantarum*-fermented teff, while controls exhibited negligible activity. These findings demonstrate that fermentation, particularly with *Lactiplantibacillus plantarum*, enhances antimicrobial functionality and modulates antioxidant and nutritional profiles, supporting its application in developing functional teff-based foods with improved health benefits.

Key words: Teff fermentation, *L. plantarum*, Antioxidant activity, Antifungal activity.

PP.3.5.

FUNCTIONAL DRESSINGS BASED ON EGG PROTEIN HYDROLYSATES AND ENCAPSULATED ANTHOCYANINS

Mihaela Brumă (Călin), Ina Vasilean, Loredana Dumitrașcu, Iuliana Banu, Nicoleta Stănciuc, Gabriela Râpeanu, Iuliana Aprodu

"Dunărea de Jos" University of Galati, Faculty of Food Science and Engineering, 111 Domnească Street, RO-800201, Galati, Romania

Corresponding author: Iuliana.Aprodu@ugal.ro

ABSTRACT

Dressings became popular additions to meals, especially in fast-foods. They are widely consumed due to their convenience, sensory appeal, flavour and versatility. The aim of the present study was to create a complex emulsion matrix, incorporating ingredients with both technological functionality and bioactive potential. Different dressing formulations were obtained using egg yolk and whole egg or their protein hydrolysates with pepsin, trypsin and Proteinase K, together with soy protein isolate as emulsifiers. Eggs proteins hydrolysis was intended to reduce the antigenic potential of the products and to release the bioactive peptides, which are inactive in the native proteins structure. The functionality of the dressings was also improved by supplementation with anthocyanins from *Aronia* pomace, microencapsulated in a mixture of spent brewer's yeast cells and protein hydrolysates. Moreover, the anthocyanins addition resulted in improved color properties of the dressings. The obtained emulsions were characterized in terms of physicochemical properties, rheological behavior and stability. The results indicated that proteins used for dressings formulation significantly affected the fundamental color parameters and stability over time. The emulsions containing egg yolk protein hydrolysates exhibited good phase stability over centrifugation, maintaining better homogeneity compared to systems based on the native proteins. Replacing the whole egg with the protein hydrolysates resulted in turn in reduced stability over centrifugation and storage at refrigeration temperature. All dressings exhibited pseudoplastic behavior. Regardless of the egg derivative and the enzyme used for their hydrolysis, the use of protein hydrolysates in the emulsions formulation resulted in significantly lower viscosity compared to samples prepared with corresponding egg derivative. These results support the potential of using the egg protein hydrolysates and encapsulated anthocyanins for developing value-added salad dressings with improved stability, functionality and potential health benefits.

Key words: egg protein hydrolysates, emulsions, anthocyanins.

PP.3.6.

PRELIMINARY STUDIES ON THE MICROWAVE ASSISTED EXTRACTION OF BIOACTIVE COMPOUNDS FROM ROSEMARY

Daniela Țiuleanu (Bari), Mihaela Brumă (Călin), Ina Vasilean, Iuliana Aprodu

"Dunărea de Jos" University of Galati, Faculty of Food Science and Engineering, 111 Domnească Street, RO-800201, Galati, Romania

Corresponding author: Iuliana.Aprodu@ugal.ro

ABSTRACT

Rosemary (*Rosmarinus officinalis* L), belonging to the Laminaceae family, is widely used in medicine to treat different affections, from insomnia and headache to respiratory problems. The therapeutic effects were linked to the rich profile of bioactive compounds, such as phenolic acids, flavonoids and terpenoids. The study aimed to investigate the emergent extraction method, namely microwave assisted extraction, on the efficiency of recovering the bioactive compounds from the rosemary leaves and stems. Most studies dealing with rosemary phytochemical profile are focused on extracts prepared through conventional extraction methods. Here we employed an emergent extraction method, seeking for a more efficient extraction rate, while being less time consuming, without generating chemical waste. Regarding the microwave assisted extraction experimental approach, two solvents were used. When using the water as solvent, the microwave extraction time considered in the experiment varied between 1 and 3 minutes, whereas the applied power was 300, 450 and 600 W. In case of the experiment involving the ethanol 50% as solvent only for the 300 W power was possible for a extraction time up to 3 min, while the extraction at 450 and 600 W lasted 1minute. The obtained extracts were characterized in terms of total phenolic content, antioxidant activity and total flavonoids content. Regardless of the power and extraction time, in case of both anatomical parts of rosemary, the ethanol ensured 2-3 times higher extraction rate compared to water. The highest phenolic content of 97.99±0,7 mg gallic acid/g was ensured by ethanolic extraction, at 300 W for 1 minute. These studies highlight the possibility of using microwave for the efficient extraction of the bioactive compounds from aromatic plants.

Key words: Rosemary, microwave assisted extraction, phenolic and flavonoids content.

Acknowledgement: This work was supported by a grant from the Ministry of Research, Innovation and Digitization, CNCS/CCCDI-UEFISCDI, project number ERANET-M-3-SMARTGEL, within PNCDI IV.

PP.3.7.

EVALUATION OF FUNCTIONAL PROPERTIES OF BIOPOLYMERIC FILMS FOR AGRICULTURAL APPLICATIONS

Valentina-Elena Gorgan[a], Aida Mihaela Vasile[b], Gabriela Bahrim[b], Petronela Nechita[a]

[a] "Dunărea de Jos" University of Galati, Faculty of Engineering and Agronomy, Calea Călărașilor no. 29, 810017, Brăila, Romania

[b] "Dunărea de Jos" University of Galati, Faculty of Food Science and Engineering, 111 Domnească Street, RO-800201, Galati, Romania

Corresponding author: valentina.gorgan@ugal.ro

ABSTRACT

The study focuses on the use of biopolymer raw materials with high sustainability potential, namely chitosan, sodium alginate and nanocrystalline cellulose, as alternatives to conventional synthetic polymers. The films were obtained by forming methods specific to the casting technique, and their functional properties were evaluated by determining some of the physical-functional parameters (e.g. thickness, air and water vapours permeability, mechanical properties), as relevant indicators for behavior in mulching applications. A commercial mulch film based on synthetic polymers was used as reference. The obtained results highlight differences between the studied formulations, suggesting the influence of the composition on the final properties of the biodegradable films. Their interpretation allows highlighting the advantages of each type of material in relation to its potential use in agriculture. An important aspect of the study is the ecological character of the developed materials, as they are biodegradable in the soil and contribute to reducing the negative impact associated with the use of conventional plastics. Thus, the research supports the development of sustainable solutions for modern agricultural applications.

Key words: biopolymers, mulching films, physical-functional parameters, air permeability, sustainable solutions.

PP.3.8.

INVESTIGATION OF THE EFFECTS OF BIOACTIVE COMPOUND-LOADED SODIUM ALGINATE MICROCAPSULES ON RADISH (*RAPHANUS SATIVUS*) DEVELOPMENT

Valentina-Elena Gorgan[a], Gabriela Bahrim[b], Petronela Nechita[a]

[a] "Dunărea de Jos" University of Galati, Faculty of Engineering and Agronomy, Calea Călărașilor no. 29, 810017, Brăila, Romania

[b] "Dunărea de Jos" University of Galati, Faculty of Food Science and Engineering, 111 Domnească Street, RO-800201, Galati, Romania

Corresponding author: valentina.gorgan@ugal.ro

ABSTRACT

The study aims to develop and apply alginate-based microcapsules loaded with bioactive compounds (wine yeast and grape pomace) with potential for use in agricultural crop technology, as sustainable solutions for stimulating plant growth. The microcapsules were obtained by an ionic gelation method, based on the interaction of sodium alginate with calcium ions (Ca^{2+}), leading to the formation of spherical structures capable of incorporating and gradually releasing the active substances. The bioactive compounds used were integrated into the polymer matrix in order to evaluate their effect on plant development. The agronomic effect of the microcapsules was tested on two varieties of radish (*Raphanus sativus*), by applying different treatments, corresponding to the type of encapsulated compounds. The parameters analyzed included germination rate, plant height and tuberized root weight, as indicators of vegetative and productive development. The experimental results highlight differential influences of the applied treatments, suggesting that the nature of the bioactive compounds encapsulated in sodium alginate has a significant role on plant growth performance. The study supports the potential of biopolymer microcapsules as a sustainable alternative in agriculture, contributing to the valorization of organic by-products and the development of environmentally friendly technologies.

Key words: sodium alginate, microencapsulation, wine yeast, grape pomace, *Raphanus sativus.*

PP.3.9.

INVESTIGATING TANNIN'S ROLE IN ENHANCING WHITE WINE STABILITY

Mihaela Manuela Hozoc (Nedelcu)[a], Oana Emilia Constantin[a], Iuliana Aprodu[a], Gabriela Elena Bahrim[a], Nicoleta Stănciuc[a], Sergiu Erich Palcu[b], Gabriela Râpeanu[a]

[a] "Dunărea de Jos" University of Galati, Faculty of Food Science and Engineering, 111 Domnească Street, RO-800201, Galati, Romania

[b]"Aurel Vlaicu" University of Arad Faculty of Food Engineering, Tourism and Environmental Protection, 2 Elena, Dragoi Street, RO-310330, Arad, Romania

Corresponding author: mica322244@yahoo.com

ABSTRACT

The present research investigates the influence of tannins addition on the stability of white wine obtained from the Şarbă grape variety. In general, white wines are characterized by a lower content of phenolic compounds compared to red wines, as a result of the limited contact with the skin during the technological process, which leads to a lower extraction of phenolic compounds from the skin and seeds. To compensate this deficit, an addition of tannin was used during winemaking, in three different concentrations, ranging from 30 mg/L to 100 mg/L. The content of polyphenols and antioxidant activity was monitored throughout the 6-month storage periods by using spectrophotometric methods (Folin–Ciocalteu, DPPH, and FRAP tests). The results obtained revealed that the supplementation with tannins determined a significant increase in antioxidant activity and contributed to increasing the overall stability of white wines. The results suggested that the use of tannins could be considered an effective strategy for increasing the final stability of white wines.

Key words: white wines, tannins, stability, antioxidant activity.

PP.3.10.

EVALUATION OF PARENTAL FEEDING PRACTICES AND CHILD EATING BEHAVIOURS: A REGRESSION-BASED ANALYSIS ON A ROMANIAN SAMPLE

Cornelia Huhulea (Hodorogea)[a], Loredana Dumitrașcu[b], Iulia-Lidia Bleoancă[b], Iulia-Dana Moraru[b], Corina-Aurelia Zugravu[c], Maria Turtoi[a]

[a] "Dunarea de Jos" University of Galati, Cross-Border Faculty, 111 Domneasca Street, Galati, Romania
[b] "Dunărea de Jos" University of Galati, Faculty of Food Science and Engineering, 111 Domnească Street, RO-800201, Galati, Romania
[c] "Carol Davila" University of Medicine and Pharmacy, Faculty of Midwifery and Nursing, 8 Eroii Sanitari Blvd, Bucharest, Romania

Corresponding author: Maria.Turtoi@ugal.ro

ABSTRACT

Parental feeding practices are crucial in shaping children's eating behaviours. This study investigated the predictive power of parental feeding practices (Monitoring, Restriction for Weight Control, Modelling, and Food as a Reward) on child eating behaviours (Enjoyment of Food, Emotional Overeating, and Desire to Drink). A sample of 443 Romanian caregivers of children aged 2–7 years completed the Romanian versions of the Comprehensive Feeding Practices Questionnaire (CFPQ) and the Child Eating Behaviour Questionnaire (CEBQ). The analysis employed linear regression models based on validated 4-factor CFPQ and 3-factor CEBQ structures, confirmed via Exploratory Factor Analysis and Confirmatory Factor Analysis. The models explained a modest proportion of variance of 9% for Enjoyment of Food and 7% for Emotional Overeating. Monitoring ($\beta = 0.15$, $p < 0.01$) and Modelling ($\beta = 0.13$, $p < 0.01$) were positively associated with Enjoyment of Food. Conversely, Restriction for Weight Control was positively associated with both Enjoyment of Food ($\beta = 0.18$, $p < 0.001$) and Emotional Overeating ($\beta = 0.18$, $p < 0.001$). Additionally, Food as a Reward was associated with Emotional Overeating ($\beta = 0.15$, $p < 0.01$) and Desire to Drink ($\beta = 0.14$, $p < 0.01$). While positive practices like modelling promote enjoyment of food, restrictive and reward-based strategies may inadvertently trigger maladaptive behaviours, including emotional overeating.

Key words: parental feeding practices, child eating behaviours, linear regression analysis.

PP.3.11.

OPTIMIZING THE ULTRASOUND-ASSISTED EXTRACTION OF THE ULVAN FROM THE *ULVA LACTUCA* BY RESPONSE SURFACE METHODOLOGY

Alina Macoveiu Dobre, Gigi Coman, Liliana Mihalcea, Lorena Dediu

”Dunărea de Jos” University of Galati, Faculty of Food Science and Engineering, 111 Domnească Street, RO-800201, Galati, Romania

Corresponding author: adobre14@gmail.com

ABSTRACT

Ulva sp. include macroscopic marine algae that are widespread along the coast of the seas and in many infrastructures developed on non-arable land. The interest on the bioactive characterization and extraction of the ulvan polysaccharide will influence the expanding of the compound annual growth rate (CAGR) with 7.4% during the period from 2026 to 2034. In this study, the optimization of the ulvan yield was performed by response surface methodology with a central composite design. The temperature positively influences the ulvan yield with the maximum value of 36.20 mg ulvan/g dry weight (DW) algae at 80°C. Fourier Transform Infrared (FTIR) Spectroscopy analyses of the ulvan powder revealed the presence of the uronic acid carboxylic group (–COO–) with asymmetric and symmetric stretching vibrations, alongside of sulfate ester groups in the fingerprint region between 1220 – 1270 cm-1 pointing to sulfate ester rhamnose (Rha-3-SO_4) as main ulvan marker.

Key words: ulvan, ultrasound-assisted extraction, response surface methodology, *Ulva* sp.

PP.3.12.

ENZYMATIC METHODS FOR MEASURING THE REDUCING SUGAR IN WINE

Gianina Marian (Țoca)[a], Oana Emilia Constantin[a], Nicoleta Stănciuc[a], Iuliana Aprodu[a], Claudia Mureșan[b], Gabriela Râpeanu[a]

[a] "Dunărea de Jos" University of Galati, Faculty of Food Science and Engineering, 111 Domnească Street, RO-800201, Galati, Romania

[b] "Aurel Vlaicu" University of Arad Faculty of Food Engineering, Tourism and Environmental Protection, 2 Elena, Dragoi Street, RO-310330, Arad, Romania

Corresponding author: tocagianina@gmail.com

ABSTRACT

Because sugars are considered a quality parameter of wine, their determination in wine shows an important economic interest. Grape sugars are predominantly hexoses, such as glucose and fructose, in which their content is influenced mostly by grape variety, ripening stage, harvest time, climate and other agronomic practices. In grape must, glucose and fructose levels are found between 170 and 260 g/L and in wines, both sugars occurring at lower concentrations because they have been fermented into ethanol via yeast during the fermentation process. Because the residual sugar content in wine is used to measure the level of alcoholic fermentation and can be associated with possible stuck fermentations or illegal adulteration, their precise and reproducible quantification represents an essential aspect for grape-wine quality control. This study's primary goal was to develop an enzymatic technique for measuring the residual monosaccharides content in wines that might detect potential fraud in the wine samples. After analyzing 110 wine samples (white, red, and rose), the findings showed that there was less than 1% differences between the sugar level values determined by the classical School method compared to the enzymatic method.

Key words: glucose, fructose, wine adulteration, enzymatic method.

PP.3.13.

STRATEGIC VALORIZATION OF BY-PRODUCTS FROM WHITE GRAPE WINEMAKING INTO A SUSTAINABLE SOLUTION FOR REDUCING ENZYMATIC BROWNING IN APPLES

Silviu Mănțăilă, Iuliana Aprodu, Adelina Ștefania Milea, Nicoleta Balan, Gabriela Râpeanu, Nicoleta Stănciuc

”Dunărea de Jos” University of Galati, Faculty of Food Science and Engineering, 111 Domnească Street, RO-800201, Galati, Romania

Corresponding author: silviumantaila855@gmail.com

ABSTRACT

The impact of climate change on Romanian agri-food production has led the sector to focus on implementing effective strategies for the full utilization of plant resources, particularly by-products such as white grape pomace (WGP). This study investigates the use of WGP as a source of bioactive compounds, acting as a sustainable eco-solution for reducing polyphenol oxidase (PPO) activity in apples. Optimization of ultrasound-assisted extraction using a natural deep eutectic solvent (NaDES) composed of choline chloride and lactic acid (molar ratio 1:2, with 20% water) identified optimal conditions of 60°C, 30 minutes, and a liquid-to-solid ratio of 10 mL/g for maximizing the recovery of antioxidant polyphenols. HPLC-HRMS characterization revealed a complex polyphenolic profile, consisting of 23 compounds (≈ 70% phenolic acids). Fluorescence spectrometry showed that heat treatment of PPO in the range of 70–90°C, resulted in a reduction in intrinsic fluorescence from 63.80% to 32.10%, indicating tertiary structural changes associated with protein unfolding and rearrangement of fluorophores toward the interior of the enzyme. *In silico* investigations revealed the interaction of the major phenolic compounds in the WGP-NaDES extract with two distinct cavities of PPO, suggesting a uncompetitive inhibition mechanism. The results obtained highlight the application of a strategy aligned with sustainability principles. Therefore, in this study, the WGP is reconsidered not as waste, but as a valuable resource of bioactive compounds with potential to reduce food losses associated with PPO activity.

Key words: white grape pomace, polyphenol oxidase, sustainability

PP.3.14.

EFFECT OF PURPLE CARROT POWDER ADDITION ON STABILITY OF MILK TABLETS DURING STORAGE

Alexandra Teodora Gheorghe (Mărtin)[a], Gabriela Râpeanu[a], Oana Emilia Constantin[a], Nicoleta Stănciuc[a], Iuliana Aprodu[a], Claudia Mureșan[b]

[a] "Dunărea de Jos" University of Galati, Faculty of Food Science and Engineering, 111 Domnească Street, RO-800201, Galati, Romania

[b] "Aurel Vlaicu" University of Arad Faculty of Food Engineering, Tourism and Environmental Protection, 2 Elena, Dragoi Street, RO-310330, Arad, Romania

Corresponding author: teodora.martin83@gmail.com

ABSTRACT

In this paper, a detailed study of the phytochemical behavior during 28 days of storage for an innovative product such as milk tablets enriched with purple carrot peels powder are presented. The product formulation includes the incorporation of the powder resulted from purple carrot peels in various proportions of 2.5% (C1) and 5% (C2) in a control sample (C). The stability of the innovative product was monitored by evaluating the phytochemical compounds (total anthocyanins, total polyphenols, total flavonoids and antioxidant activity) at equal intervals of 7 days. At the end of the storage period, the results revealed that the content of phytochemical compounds in the value added milk tablets was significantly higher compared to the control. Results suggested that the presence of purple carrot powder increases the stability of valued added samples C1 and C2 during storage. However, the values of phytochemicals measured on the last day of storage are significantly lower than initial day. Total anthocyanins content decreased by 48-50%, total flavonoids content by 6-8%, total polyphenols content decreased by 9-11%, and, in addition, the antioxidant activity decreased by about 17-20% for C1 and C2 samples.

Key words: purple carrot powder, purple carrot by-products, phytochemical behaviour, milk tablets.

PP.3.15.

PURPLE CARROT POWDER - VALUABLE INGREDIENT FOR VIOLET CREAM CHEESE FORMULATION

Alexandra Teodora Gheorghe (Mărtin)[a], Gabriela Râpeanu[a], Oana Emilia Constantin[a], Nicoleta Stănciuc[a], Iuliana Aprodu[a], Claudia Mureșan[c]

[a] "Dunărea de Jos" University of Galati, Faculty of Food Science and Engineering, 111 Domnească Street, RO-800201, Galati, Romania

[b] "Aurel Vlaicu" University of Arad Faculty of Food Engineering, Tourism and Environmental Protection, 2 Elena, Dragoi Street, RO-310330, Arad, Romania

Corresponding author: teodora.martin83@gmail.com

ABSTRACT

Food industry researchers are looking for ecological variants of food dyes, being known that synthetic pigments develop toxic compounds, uncertain in food safety. The main objective of this study was to identify the colorimetric potential of purple carrot powder added to a spreadable cheese in proportions of 2.5% (B1) and 5% (B2). The colorimetric analysis was performed with a Konica Minolta CR-110 colorimeter (Konica Minolta Solutions Ltd., Basildon, UK), and the following parameters L*, a*,b*, Hue°, Chroma, and ΔE were determined. The results suggested that the addition of the purple carrot powder causes significant changes in the measured parameters. A high decrease in L* parameter was observed in B1 and B2 samples compared to the control sample. The a* value increased significantly from -2.91± 0.04 (control sample) to 13.62±0.02 (B1) and 15.60±0.01 (B2), while the b* parameter was significantly reduced from 14.80±0.06 (control sample) to 4.28±0.02 (B1) and 4.32±0.01 (B2). The high decrease in the L* value in B1 and B2 samples, associated with significant changes in the parameters a* and b*, indicates the decrease in the brightness while the red-violet color intensification was observed due to anthocyanins presence. Changes of Hue° values associated with increased values of Chroma in value added samples suggested that color saturation increases with the increase with the concentration purple carrot powder addition, and high color difference values (ΔE >30) confirmed the apparent chromatic differences from the control and formulated samples.

Key words: purple carrot powder, natural pigments, anthocyanins, color.

PP.3.16.

INTERFERENCE OF THE FATTY ACIDS FROM *SALVIA OFFICINALIS* SUPERCRITICAL EXTRACT ON *LISTERIA MONOCYTOGENES* VIRULENCE: AN *IN SILICO* APPROACH

Ilir Mërtiri, Iuliana Aprodu, Leontina Grigore-Gurgu, Liliana Mihalcea, Gabriela Râpeanu, Nicoleta Stănciuc

”Dunărea de Jos” University of Galati, Faculty of Food Science and Engineering, 111 Domnească Street, RO-800201, Galati, Romania

Corresponding author: ilir_mertiri@yahoo.com

ABSTRACT

This *in silico* study investigates the potential influence of the main fatty acids found in sage (*Salvia officinalis*) supercritical fluid extract (SFE) on the expression of virulence in *Listeria monocytogenes.* The fatty acid profile of the sage SFE, was analyzed using a Perkin–Elmer gas chromatograph with flame ionization detection (Model Clarus 500, Shelton, MA, USA). The four main fatty acids (nonanoic, undecanoic, linolenic, and palmitic acids) were evaluated as potential signaling molecules. The SwissDock service was employed for the molecular docking studies using the transcriptional activator PrfA, responsible for regulating the expression of key virulence factors in *L. monocytogenes*. For each complex, the best poses were determined based on the interaction energy values, and the resulting models were characterized by the highest affinity. Molecular docking simulations indicated that linolenic and nonanoic acids have a strong affinity for various narrow hydrophobic pockets of PrfA. In contrast, palmitic and undecanoic acids bind to the same site at the monomer-monomer interface. Palmitic and undecanoic acids display better affinity for the A monomer. Meanwhile, nonanoic acid showed a slightly higher affinity for the B monomer. From a thermodynamic perspective, all PrfA-fatty acid complexes are stable. Moreover, the locations of the binding sites and the specific fatty acids that interact with the PrfA receptor are crucial factors to consider. These variations can lead to significant conformational changes, which may repress the transcription of virulence genes of *L. monocytogenes*.

Key words: *Salvia officinalis*, molecular docking, green extraction method, natural extract.

PP.3.17.

EXTRACTION AND BIOLOGICAL ACTIVITY OF PHYTOCHEMICALS FROM *PORTULACA* SPECIES: A REVIEW

Nicoleta Mustață, Liliana Mihalcea

"Dunărea de Jos" University of Galati, Faculty of Food Science and Engineering, 111 Domnească Street, RO-800201, Galati, Romania

Corresponding author: Liliana.Gitin@ugal.ro

ABSTRACT

Portulaca species are annual succulent herbaceous plants distributed mainly in temperate and tropical regions from Asia, Africa or Europe. The phytochemicals from the *Portulaca* sp. include flavonoids, phenolic acids, omega-3 fatty acids, polysaccharide, terpenoids, sterols, minerals, carotenoids, vitamins, betalains and alkaloids compound classes. This study systematically reviews the current knowledge on the conventional and emerging extraction techniques, chemical structure, biological activities of the phytochemicals obtained from *Portulaca* species with particular emphasis on the extracts obtained from the leaves, stems and seeds. This review highlights the complexity of phytochemical profile that generate a wide spectrum of biological activities, including antioxidant, anti-inflammatory, antimicrobial, antidiabetic, anticancer, neuroprotective and anti-ageing effects demonstrated through *in vitro*, *in vivo* or /and emerging clinical studies.

Key words: phenolic compounds, flavonoids, antioxidant activity, microwave assisted extraction, ultrasound assisted extraction.

PP.3.18.

CHARACTERISTICS AND NUTRITIONAL BENEFITS OF FRESH GOATS MILK TELEMEA CHEESE ENRICHED WITH CARROT PULP POWDER

Florina-Genica Oncică[a], Gabriela Râpeanu[a], Nicoleta Stănciuc[a], Iuliana Aprodu[a], Constantin Croitoru[a,b], Sergiu Erich Palcu[c]

[a] "Dunărea de Jos" University of Galati, Faculty of Food Science and Engineering, 111 Domnească Street, RO-800201, Galati, Romania

[b] Academy of Agricultural and Forestry Sciences, 61 Marasti Blvd, Bucharest, Romania

[c] "Aurel Vlaicu" University of Arad, Faculty of Food Engineering, Tourism and Environmental Protection, 2 Elena, Dragoi Street, RO-310330, Arad, Romania

Corresponding author: genicaoncica@gmail.com

ABSTRACT

Carrots (*Daucus carota* L.), a widely consumed root vegetable, are rich in antioxidants, and dietary fiber, and their by-products are increasingly being incorporated into food formulations to improve nutritional quality and consumer appeal. The study aimed to develop a fresh goat's milk Telemea cheese with added value, by incorporating powder obtained from carrot pomace powder, in order to increase the nutritional and functional value of the product, as well as to valorize this agri-food by-product. Two experimental variants were obtained, with the addition of 10% and 20% carrot pomace powder, compared to the control sample. The variant with 10% carrot powder presented 14.6% protein, 18.8% lipids, 4.99% carbohydrates and 3.11% fiber, while the variant with 20% addition showed a 14.9% protein content, 18.9% lipids, 7.11% carbohydrates and 5.92% fiber. The product was also distinguished by a high content of bioactive compounds, with carotenoids ranging from 14.1–23.5 mg/100 g dry matter (DM), total polyphenols between 25.2 and 47.6 mg gallic acid equivalents/100 g dry matter, and antioxidant activity between 113.7 and 232.6 µmol Trolox equivalent/g dry matter. From a sensory point of view, an intense yellow-brown color, a pleasant aroma, a slightly salty taste and a semi-soft, compact, slightly granulated texture characterized the cheese with 10% powder. The results highlight the potential of using carrot pomace powder as a functional ingredient in dairy products, simultaneously contributing to the development of foods with an improved nutritional profile and supporting the principles of the circular economy.

Key words: carrot pomace; antioxidants; bioactive compounds, cheese formulations; nutritional enhancement.

PP.3.19.

IMPACT OF CARROT POMACE INCORPORATION ON PASTA QUALITY: A NUTRITIONAL AND SENSORY ASSESSMENT

Florina-Genica Oncică[a], Gabriela Râpeanu[a], Nicoleta Stănciuc[a], Iuliana Aprodu[a], Constantin Croitoru[a,b], Sergiu Erich Palcu[c]

[a] "Dunărea de Jos" University of Galati, Faculty of Food Science and Engineering, 111 Domnească Street, RO-800201, Galati, Romania

[b] Academy of Agricultural and Forestry Sciences, 61 Marasti Blvd, Bucharest, Romania

[c] "Aurel Vlaicu" University of Arad, Faculty of Food Engineering, Tourism and Environmental Protection, 2 Elena, Dragoi Street, RO-310330, Arad, Romania

Corresponding author: genicaoncica@gmail.com

ABSTRACT

Carrot pomace, a by-product of carrot (*Daucus carota* L.) processing for juice production, is an important source of valuable phytochemicals, including carotenoids, polyphenols, and dietary fiber. The study aimed to evaluate the influence of carrot pomace addition on the nutritional quality, physicochemical, phytochemical properties and sensory acceptability of pasta. Levels of 10% and 20% carrot pomace powder were introduced into the pasta formulations and compared to the control sample. The supplementation increased the protein content from 12.64 to 14.52 g/100 g, insoluble fiber from 0.81 to 8.28 g/100 g and ash from 1.21 to 3.07 g/100 g, simultaneously with the reduction of carbohydrates from 74.03 to 67.94 g/100 g. In addition, the enriched pastas presented higher concentrations of total carotenoids, reaching 57.17–90.34 mg/100 g dry matter (DM) in the uncooked state, as well as increased values of total polyphenols (90.23–129.96 mg EAG/100 g DM in the uncooked state) and of antioxidant activity (39.73–51.45% ABTS inhibition). From a sensory point of view, the variant with 10% addition recorded the best scores for appearance, color, aroma, odor, taste and general acceptability. The results highlight the potential of carrot pomace as a functional ingredient for obtaining pastes with improved nutritional value and favorable sensory profile, while contributing to the sustainable valorization of agro-industrial by-products.

Key words: carrot pomace; bioactive; antioxidants; value added food, pasta formulation.

PP.3.20.

COMPARATIVE EVALUATION OF FERMENTED *ULVA* AND *SPIRULINA* AS FUNCTIONAL FEED INGREDIENTS IN ONE-YEAR-OLD COMMON CARP (*CYPRINUS CARPIO*)

Cristian Rîmniceanu[a], Iulia Rodica Grecu[a], Angela Docan[a], Maria Desimira Stroe[b], Floricel Maricel Dima[b,c], Lorena Dediu[a]

[a] "Dunărea de Jos" University of Galati, Faculty of Food Science and Engineering, 111 Domnească Street, RO-800201, Galati, Romania
[b] Institute of Research and Development for Aquatic Ecology, Fishing and Aquaculture, 54 Portului Street, 800211 Galati, Romania
[c] "Dunarea de Jos" University of Galati, Faculty of Engineering and Agronomy in Braila, 29 Calea Calarașilor Street, 810017 Braila, Romania

Corresponding author: rimniceanu.cristian@yahoo.ro

ABSTRACT

The search for sustainable and functional aqua feed ingredients has intensified interest in algae-derived products, particularly when bioprocessing strategies such as fermentation are used to improve nutrient accessibility and functional value. In this study, a controlled feeding trial was conducted to comparatively evaluate the effects of fermented macroalgae (*Ulva* spp.) and fermented microalgae (*Spirulina* spp.) in one-year-old common carp (*Cyprinus carpio*). The experiment followed a 2 × 4 factorial design, with algal type (*Ulva* vs. *Spirulina*) as the first factor and dietary inclusion level (2.5, 5.0, 7.5, and 10.0%) as the second factor, alongside an un-supplemented control diet. Fish were evaluated under standardized rearing conditions for growth performance indicators, including weight gain, specific growth rate, feed conversion ratio, protein efficiency ratio, survival rate, and feed intake. In addition, hematological and serum biochemical parameters, together with oxidative stress biomarkers and antioxidant defense indicators, were assessed to characterize physiological responses. Fermentation of algal biomass appeared to enhance its nutritional and functional properties, likely through increased bioavailability of bioactive compounds and partial reduction of indigestible fractions.

Key words: *Ulva* sp., *Spirulina* sp., fermentation, *Cyprinus carpio*, functional feed.

PP.3.21.

PHYSICOCHEMICAL, PHYTOCHEMICAL AND SENSORY PROPERTIES OF MYROBALAN (*PRUNUS CERASIFERA* L.) FRUIT LEATHER: EFFECTS OF SUGAR CONCENTRATION AND ENRICHMENT WITH BLACKCURRANT AND BILBERRY POMACE POWDERS

Paula Cristina Gheorghe (Săpoi)[a,b], Alexandru Radu Corbu[b], Liliana Ceclu[c], Violeta Nour[b]

[a] "Dunărea de Jos" University of Galati, Faculty of Food Science and Engineering, 111 Domnească Street, RO-800201, Galati, Romania

[b] University of Craiova, Department of Horticulture & Food Science, 13 Al Cuza Street, 200585 Craiova, Romania

[c] Cahul State University "B.P. Hasdeu", Faculty of Economics, Engineering and Applied Sciences, Piata Independentei, 1, 3900 Cahul, Moldova

Corresponding author: cristina.gheorghe_2005@yahoo.com

ABSTRACT

Myrobalan plum is a widespread but underutilized fruit, rich in dietary fiber, organic acids and bioactive compounds. The present research was carried out to develop myrobalan plum leathers using different levels of sugar addition, and to improve their functionality by adding blackcurrant (BCP) and bilberry (BBP) pomace powders. The resulting fruit leathers were analyzed for color, titratable acidity, total phenolic content, antioxidant activity, organic acid profile, phenolic profile and sensory properties. Five samples were manufactured with different fruit pulp/sugar ratios of 100:0, 90:10, 80:20, 70:30 and 60:40, respectively. The myrobalan leathers prepared with 90% pulp and 10% sugar showed the highest sensory scores and physicochemical properties. BCP and BBP were added at 1% and 2% to the leather formulation manufactured at a myrobalan puree/sugar ratio of 90:10. Total phenolic content increased 2 and 3.5 times as a result of 1% and 2% BBP addition and only 1.15 and 1.29 times as a result of 1% and 2% BCP addition, respectively. Among the quantified phenolic compounds, epicatechin dominated in control myrobalan fruit leather, followed by catechin hydrate and chlorogenic acid. This research highlights the potential of processing myrobalan plums into fruit leathers, a nutritious and functional snack food, and of enhancing the product's functional profile and sensory appeal by adding blackcurrant and bilberry pomace powders, thus contributing to the sustainable use of these by-products.

Key words: fruit leather, berry by-products, color, phenolic compound, organic acids, antioxidant activity.

PP.3.22.

THE EFFECT OF GUM ARABIC ADDITION ON STABILITY OF *FETEASCĂ ALBĂ* WHITE WINES

Marius Florin Stoica[a], Oana Emilia Constantin[a], Iuliana Aprodu[a], Nicoleta Stănciuc[a], Sergiu Erich Palcu[b], Gabriela Râpeanu[a]

[a] "Dunărea de Jos" University of Galati, Faculty of Food Science and Engineering, 111 Domnească Street, RO-800201, Galati, Romania

[b] "Aurel Vlaicu" University of Arad Faculty of Food Engineering, Tourism and Environmental Protection, 2 Elena, Dragoi Street, RO-310330, Arad, Romania

Corresponding author: cartedevinuri@gmail.com

ABSTRACT

Fetească albă is a white grape variety indigenous to Romania, cultivated in most of the country's wine-producing areas. This objective of the present study was to evaluate the effect of gum arabic addition on colloidal stability and sensorial properties of the white wines. Following a four-day treatment period, a reduction in turbidity was noted when compared to the turbidity of the wine after one day of storage. Specifically, with a dosage of 20 g/L Gomasol Instant, the turbidity decreases by 40%, whereas with a dosage of 30 g/l Gomasol Instant, the turbidity reduction rises to 50%. The findings indicated that the application of increased amounts of gum arabic enhances the colloidal stability of wine. By utilizing high-purity microgranulated gum arabic in the treatment of white wines, it results in the creation of expressive white wines with a pronounced aromatic character, typicity, fruitiness, and smoothness.

Key words: Feteasca Alba grapes, colloidal stability, sensorial properties, gum arabic.

PP.3.23.

THE EFFECT OF ENZYMATIC PREPARATION ADDITION ON CLARIFICATION OF WHITE GRAPE MUST

Marius Florin Stoica[a], Oana Emilia Constantin[a], Iuliana Aprodu[a], Nicoleta Stănciuc[a], Sergiu Erich Palcu[b], Gabriela Râpeanu[a]

[a] "Dunărea de Jos" University of Galati, Faculty of Food Science and Engineering, 111 Domnească Street, RO-800201, Galati, Romania

[b] "Aurel Vlaicu" University of Arad Faculty of Food Engineering, Tourism and Environmental Protection, 2 Elena, Dragoi Street, RO-310330, Arad, Romania

Corresponding author: cartedevinuri@gmail.com

ABSTRACT

In the process of white winemaking, the incorporation of pectolytic enzymes is commonly employed to enhance the clarity of the white must. This method is straightforward, cost-effective, and yields beneficial outcomes for subsequent technological phases, such as improved filterability and performance during stabilization treatments, as well as enhancing the quality of the wine. Various factors were assessed, including the type of must (free run must versus press must), the kind of enzymatic preparations utilized (grape maceration enzymes and must clarification enzymes), the timing of enzyme application, and the quantities of enzymes administered. The findings indicated that the optimal timing for enzyme application and the appropriate dosages should be determined based on the type of enzyme preparation (whether for maceration or clarification) and the intended purpose, whether clarification or enhancement of the must's clarity and the quality of the resulting wines. In this context, the use of maceration enzymes is advised.

Key words: Feteasca Alba grapes, clarification, enzymatic preparation.

PP.3.24.

ACTIVATED CARBONS MADE FROM COCOA (*THEOBROMA CACAO*) AND COCONUT (*COCOS NUCIFERA*) SHELLS CAN BE USED AS ADSORBENTS TO IMPROVE THE QUALITY OF FRYING OILS

Gires Boungo Teboukeu[a], Prudent Ngabe Mituga[b], Ghislain Tazoho Maffo[b], Georges Teikam Kenda[c], Ronice Zokou[b], Archelle Abaobo Foudjin[b], Hilaire Macaire Womeni[b]

[a] University of Bamenda, Faculty of Science, Department of Biochemistry, P.O. Box 39, Bambili-Cameroon

[b] University of Dschang, Faculty of Science, Department of Biochemistry, P.O .Box 67, Dschang, Cameroon

[c] University of Dschang, Faculty of Science, Department of Chemistry, P.O .Box 67, Dschang, Cameroon

Corresponding author: teboukeu.boungo@uniba.cm

ABSTRACT

This research aimed to evaluate the ability of activated carbons derived from cocoa and coconut shells to eliminate oxidation products and regenerate frying oils. The powders were activated, after which they were carbonized at various temperatures. The resulting activated carbons were characterized using the Boehm and methylene blue method. The best adsorbent activated carbons, as well as their mixtures, were used to treat/filter oxidized oils collected after 8, 16 and 24 frying cycles. The primary (hydroperoxides) and secondary (aldehydes) oxidation products, the free fatty acids were quantified before and after treatment using standardized methods. A sensory evaluation of doughnuts fried in the filtered oils was also conducted. The results of the study demonstrate that carbonized cocoa shells at 300°C and carbonized coconut shells at 200°C exhibit superior porosity, a substantial adsorption surface area, and a high proportion of acidic functions (34.4–35%). Activated carbons made from cocoa shells and from the mixture, cocoa-coconut shells at 15% demonstrated their ability to reduce impurities (hydroperoxides, aldehydes) in frying oil and to improve organoleptic properties of deep-fried products. This study can be used as a benchmark for the valorization of these agricultural by-products in the production of natural adsorbents for oil regeneration.

Key words: activated carbons, adsorbent, cocoa shells, coconut shells, frying oils.

PP.3.25.

PLACKETT-BURMAN APPROACH FOR SCREENING CRITICAL PARAMETERS IN THE FERMENTATION OF HULLED HEMP SEEDS (*CANNABIS SATIVA* L.)

Virginia Tanase Apetroaei, Mihaela Cotârleț, Daniela Ionela Istrati, Eugenia Mihaela Pricop, Gabriela Elena Bahrim, Camelia Vizireanu

”Dunărea de Jos” University of Galati, Faculty of Food Science and Engineering, 111 Domnească Street, RO-800201, Galati, Romania

Corresponding author: Virginia.Tanase@ugal.ro

ABSTRACT

In this study, a Plackett–Burman experimental design was applied as a preliminary screening tool to identify the most influential factors affecting the fermentation of media based on dehulled hemp seeds (*Cannabis sativa* L.) as the main substrate, supplemented with okara and date syrup. Seven independent variables were investigated at two levels of variation: hemp seed concentration (5–15%, w/w), okara (1–3%, w/w), date syrup (1–3%, w/w), water kefir grain inoculum (0.10–0.50%, w/w), fermentation time (24–72 h), temperature (25–35 °C), and agitation rate (0–100 rpm). For sample standardization, the pH was adjusted to 6.50, and autoclaved at 121 °C for 15 minutes. The samples were then inoculated and fermented, according to the experimental matrix. The experimental responses included total titratable acidity (TTA), antioxidant activity (ABTS and DPPH), soluble protein content (SPC), total phenolic content (TPC), total flavonoid content (TFC), and antifungal activity against *Penicillium expansum* MIUG M11. Statistical analysis (ANOVA) revealed that hemp seed concentration, date syrup, and starter culture were the most significant factors influencing fermentation outcomes ($p < 0.05$). Extended fermentation time and agitation positively affected flavonoid content, suggesting enhanced release of phenolic compounds through degradation of the plant matrix. In contrast, variations in protein and total phenolic content indicated interactions between time and temperature, reflecting complex biotransformation processes. Overall, the Plackett–Burman design proved to be an efficient approach for reducing experimental complexity, demonstrating that compositional variables (particularly hemp seed and date syrup concentrations), along with technological parameters (temperature, time, and agitation), significantly influence the bioactive and nutritional characteristics of the fermented product ($p < 0.05$). The statistical models obtained showed high coefficients of determination (R^2 ranging from 0.8737 to 0.9994). This study confirms that the Plackett–Burman design effectively identifies key variables, providing a solid basis for further optimization using Response Surface Methodology (RSM). Moreover, semi-solid fermentation (S-SSF) of substrates derived from dehulled hemp seeds (*Cannabis sativa* L.) represents a promising strategy to enhance the bioactive profile of functional foods.

Key words: hemp seeds, *Cannabis sativa* L., S-SSF fermentation, screening, Plackett-Burman, antioxidant activity, bioactive properties.

PP.3.26.

INTERCONNECTION BETWEEN SUSTAINABILITY, CIRCULAR ECONOMY, FOOD WASTE, AND FOOD EDUCATION IN SCHOOLS

Cornelia Huhulea (Hodorogea)[a], Maria Turtoi[b*]

[a] PhD student – Doctoral School of Fundamental and Engineering Sciences, Food Engineering field, „Dunarea de Jos" University of Galati, Romania

[b] „Dunarea de Jos" University of Galati, Cross-Border Faculty, 111 Domneasca Street, Galati, Romania

*Corresponding author: maria.turtoi@ugal.ro

ABSTRACT

Sustainability, circular economy, food waste reduction, and food education are deeply interconnected within school settings, forming a foundation for building environmentally responsible and health-conscious communities.

Sustainability in education promotes understanding of how human actions affect the ecological balance of the planet and the social well-being. Teaching children to value resources and make mindful consumption choices helps build habits that support long-term environmental health.

The circular economy complements this by encouraging systems that reuse, recycle, or recover resources rather than waste them. In schools, this can translate into practical strategies such as composting food scraps, reusing materials, or creating „closed-loop" lunch systems where waste becomes input for new activities, for instance, compost feeding school gardens. Research shows that adopting circular economy „R strategies" (reduce, reuse, recycle, recover, rethink, etc.) in school cafeterias can notably reduce waste while fostering ecological awareness among students.

Food waste is both an environmental and ethical issue. Globally, school canteens can waste between 4% and 46% of the food they serve, contributing to greenhouse gas emissions and resource waste.

Educational interventions, such as measuring plate waste, teaching composting, or linking meals to sustainability concepts, have been found to reduce waste significantly and strengthen the appreciation of food by students.

Finally, food education connects these ideas through experiential learning. Programs that integrate cooking, gardening, and food waste management teach students not only nutrition and health but also respect for the food system. Studies show that when children grow and prepare their own food, their food literacy and sustainable habits improve.

Together, these dimensions create a powerful framework: schools become miniature models of sustainable food systems, nurturing students who understand the circular relationship between consumption, waste, and planetary health.

Key words: circular economy, food waste, food education, sustainability.

Acknowledgments: This paper was co-financed by the European Regional Development Fund (ERDF) through the Smart Growth, Digitization and Financial Instruments Program (PoCIDIF), call PCIDIF/144/PCIDIF_P1/OP1/RSO1.1/PCIDIF_A3, Project SMIS number 309287, acronym METROFOOD-RO Evolve.