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FOODTECHMEET2022

International Meet on Food Science and Technology

August 18-20, 2022 | Edinburgh, Scotland

ALBEDO MEETINGS
Floor# 3, Advant Building, 99B, Kakatiya Hills, Kavuri Hills, Madhapur Hyderabad, TS 500033
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FOREWORD

Dear Colleagues,

It is our pleasure to invite all scientists, academicians, young researchers, business delegates and students from all over the world to attend the International Meet on Food Science and Technology (FOODTECHMEET2022), to be held during August 18-20, 2022 in Edinburgh, Scotland.

FOODTECHMEET2022 shares an insight into the recent research, which gains immense interest with the colossal and exuberant presence of young and brilliant researchers, business delegates and talented student communities.

FOODTECHMEET2022 goal is to bring together, a multi-disciplinary group of scientists from all over the world to present and exchange break-through ideas relating to the Food Science and Technology. It promotes top level research and to globalize the quality research in general, thus makes discussions, presentations more internationally competitive and focusing attention on the recent outstanding achievements in the field of Food Science and Technology.

We’re looking forward to an excellent meeting with scientists from different countries around the world and sharing new and exciting results in Food Science and Technology.

We look forward to seeing you at FOODTECHMEET2022 in Edinburgh, Scotland

COMMITTEES

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Free-Air CO_2 Enrichment of a Commercial Almond Orchard

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Abstract

Free-air CO_2 enrichment (FACE) technology was developed that enabled open-field plots to be enriched with CO_2 for entire growing seasons to assess crop responses to increasing atmospheric CO_2 concentrations. Since then, FACE experiments have been conducted on several agricultural crops. Generally, elevated CO_2 from FACE experiments (enrichment to 200 ppm above ambient that was about 350 ppm in 1990 and is 415 ppm presently) stimulated biomass and yield in most crops and showed improved water use efficiency. Elevating CO_2 concentrations up to 1000 ppm have been successfully used in confined space agriculture. This project is to demonstrate the feasibility of the commercial application of free-air CO_2 enrichment in an almond orchard utilizing low or no cost CO_2 from CO_2 generating operations such as a neighboring petroleum refinery's natural gas fired power generation unit stack which releases over 50,000 tons of CO_2 per year into the atmosphere. The challenges of exhaust gas cooling, delivery of uniform CO_2 concentration throughout the tree canopy, CO_2 fluctuations from natural air movement and use of membranes to concentrate and recirculate CO_2 will be reviewed.

Keywords

CO_2 Enrichment; Almond; CO_2 Sequestration

Biography

Dr. Brian H. Marsh was raised in Patterson, California, a small farming community in western Stanislaus County. He received B.S. in 1986 in Plant Science, a M.S. in 1987 in Soil Science and Biometeorology from Utah State University and a Ph.D. in 1990 from the University of Kentucky in Soil Science. He was an Assistant Professor and Agronomist-in-Charge at the Kansas State University Cornbelt Experiment Field in northeastern Kansas from 1991 to 1998. He returned to California in 1998 as a UC Cooperative Extension Farm Advisor and Director of the UC Shafter Research and Extension Center Director. In 2013 he took on the responsibility of Cooperative Extension County Director. He continues to conduct research and extension education programs for agronomic crops. He is a member of the American Society of Agronomy, Soil Science Society of America, Phi Kappa Phi, Sigma Xi, and Gamma Sigma Delta. He serves on the Board of the Kern County Science Foundation and the International Scientific Council of the World Academy of Science, Engineering and Technology.

Digital Health, Nutrition and Healthy Ageing

David Wortley

International Society of Digital Medicine, UK

Abstract

The Ageing Society and the cost burden of lifestyle-related chronic medical conditions that manifest themselves when we get older is one of mankind's most serious global issues. Especially during the times of pandemics and other abnormal critical health issues, it threatens the sustainability of public health services and directly or indirectly causes unnecessary deaths. This situation is made worse by the growing portion of elderly retired people compared to the shrinking working population.

Preventative healthcare measures which should be implemented at as early a stage in life as possible is an important strategy for addressing the causes of these lifestyle condition which lead to obesity, diabetes, cardiovascular and other problems.Exercise, diet, hydration, sleep and mindfulness are key to healthy active ageing and tackling these problems. This presentation looks at how technology can be applied to change behaviours and the role of mobile applications and wearable devices in diet and nutrition, exercise, sleep and stress management.

Biography

David Wortley is one of the UK's leading pioneers of Immersive Technologies with a 30+ year record of digital technology innovation. David was the Founding Director of the Serious Games Institute (SGI) where he was responsible for developing the SGI as a global thought leaderand international centre of excellence. He has regularly spoken at international conferences on wide variety of topics related to the disruptive impact of digital technologies on business and society.

He is a Vice President of the International Society of Digital Medicine and specialises in digital health and digital therapeutics for personal health management. He is a regular keynote speaker at international conferences on digital health and healthy ageing.

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Impact of Sesame Cake on Physicochemical and Sensorial Characteristics of Wheat breads

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Abstract

Bread is consumed globally due to bothlow costandits high nutritional value. Thus, the incorporation of oil seedsinto bread formulations, such as sesame seed, havinga high protein concentration, may enhancethe biological value of white wheat bread. Sesame cake is aby-product of sesame oil extraction and is mainly used as fertilizer or animal feed. Alternatively, it mightbe used as a functional ingredient in food products due to its high content in protein, calcium and dietary fibers. In this study, sesame cake was incorporated in wheat bread formulations to improvethe nutritional value of wheat flour breads; i.e. two different cakes with 11% (LF) and 17% (HF) fat contents were used in the bread formulations at three different levels, 6, 12 and 20% flour base (FB). Loaf specific volume was determined with a benchtop laser-based scanner, whereas textural changes in the crumb and crust of breads was evaluated by Texture Profile Analysis (TPA test) and puncture testing, respectively, using a Texture Analyzer. The estimated parameters were crust hardness as well ascrumb hardness, consistency and chewiness. Sensory analysis was also conducted with15 trained panelists. The loaf specific volume was reducedwith inclusion of 12% LF (2.60±0.03 ml/g) and 20% LF (2.28±0.02ml/g), compared to control bread madesolely by wheat flour (2.95±0.04 ml/g). Regarding crust hardness, after 3 days of storage, all samples exhibited similar values. The crumb hardness significantlyincreasedin samples with 12% LF, 20% LFand 20% HF (19.83±2.13, 28.70±1.2 and 20.52±0.14 N, respectively), compared to controlbread (15.52±0.79 N), after 3 days of storage at 25oC, indicating greater staling for these fortified formulations, while all others sesame cake containing breads displayed similar crumb hardness to the control. Crumb moisturedecreased, and crust moisture of all samples increased during storage due to water migration from crumb to crust. Also, inclusion of high levels of sesame cakeinto wheat bread resulted in darker color in bread crust. Finally, sensory analysis revealed a slightly bitter tastefor breads with 6%HF, 12%HF, 6%LF and 12%LF, which was acceptable, however, by the panelists. Additionally, as the levels of sesame cake increased, sesame seed aroma and taste increased proportionally. Overall, the incorporation of sesame cake appeared to be a promising high protein and high dietary fiber raw material for wheat bread fortification, resulting in products with acceptable textural and sensorial characteristics when introduced up toa certain level in the composite dough formulation, thus providingtoconsumers an alternative baked product of enhanced nutritional profile.

Keywords:
Sesame Cake; Wheat Bread; Bread Texture; Bread Sensory Analysis.

Biography

Athina Lazaridou is an Associate Professor in Food Physical Chemistry in the Dept. of Food Science and Technology, School of Agriculture, Aristotle University of Thessaloniki. She received her bachelor's (1995), M.Sc. (1999), and Ph.D. (2003) degrees from the same University. She has worked as post-doctoral fellow in the University of Manitoba, Dept. of Food Science (2003-2005) as well as post-doctoral fellow (2005-2006) and Research Associate (2006-2010) in the Dept. of Food Science and Technology of Aristotle University of Thessaloniki. Her research interests include the chemistry and physical chemistry of food hydrocolloids with an emphasis on understanding phase transition behaviour of food biopolymers and structure-property relations of polysaccharides in solution, dispersions, gels and edible films and coatings as well as their functionality in model or real food formulations. She is the author/co-author of more than 70 peer-reviewed publications (SCI, Scopus journals), 4 book chapters, 8 articles in conference proceedings, and has more than 90 contributions to national and international conferences (h-Index 29, 3900 citations, Scopus). She has worked in more than 30 National, International and European research projects. Dr Lazaridou was the recipient of the 'Young Scientist's Award – 2009' of the Rheology Division of the American Association of Cereal Chemists (AACC) International, in recognition of her outstanding research contributions in the area of food rheology and texture of cereal-based products. She is a member of the editorial board of 'Food Hydrocolloids' and "Bioactive Carbohydrate and Dietary Fiber" journals.

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Toxicogenic Moulds and Mycotoxins in Traditional Dry-Cured Meat Products

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Abstract

Dry-cured meat products are traditional foodstuffs consumed worldwide, but typically produced by European Mediterranean countries. The producing households differ not only in recipes theyfollow, but also in hygienic and environmental conditions that affect the specificity of microflora and quality &safety of these products. The prevalence and diversity of moulds overgrowing traditional dry-cured meat products is proportional to their ripening longevity (often 6 - 18 months), and related to regional environments, especially so with home-based production that employs no microbiological filters and pneumatic barriers, and often exercises no temperature and relative air humidity control. One of the safety aspects is contamination with toxigenic moulds and their secondary metabolites mycotoxins, directly produced by toxicogenic moulds of mostly Aspergillus and Penicillium genera that overgrow the product surface during long ripening. This study covers a total of 250 traditional homemade meat products (107 dry-fermented sausages and 143 dry-cured meats, including dry-cured hams, dry racks, and bacon), sampled during 2020 and 2021 in five Croatian regions. Mould species were identifiedusing both traditional and molecular method, the latter being beta-tubulin and calmodulin loci sequencing with the use of PCR (polymerase chain reaction). Five mycotoxins most important for dry-cured meat products and insofar covered by no legislation at all, i.e., aflatoxin B1 (AFB1), ochratoxin A (OTA), sterigmatocystin (STC), citrinin (CIT), and cyclopiazonic acid (CPA),were analysed using LC-MS/MS (liquid chromatography-tandem mass spectrometry). The obtained results were interpreted relative of the producing geographical region and itstypical weather, and relative of the productiontechnology. A total of 535 isolates was retrieved,containing 38 mould species dominated bythe Penicillium (61%) overthe Aspergillusgenus (39%). As many as 27% of the analysed samples were contaminated with mycotoxins, in specific with STC in concentration of up to 3.93 µg/kg, OTA in concentration of up to 4.81 µg/kg, and CPA in concentration of up to 335.5 µg/kg, while contamination with AFB1 and CIT failed to be seen. A significant difference in the number of mould isolates was found only among products produced using different technologies, but there exists a difference in predominant species dependent on the region of the product's origin. Dry-cured meats harboured a higher number of mould isolates than dry-fermented sausages,probablydue to their longer maturation.The Southern region (often compared to subtropical regions) is the only production region whose products contained a higher number

of Aspergillusthan of Penicilliumisolates.Although a statistically significant difference in concentration of mycotoxins respective of the production region and technology failed to be documented, mycotoxin occurrence varies across regions. Higher contamination of dry-fermented sausages in comparison with dry-cured meats indicatesa possible contamination of spices added to them. The largest number of contaminated samples came from the Eastern and the Western regions with moderate climate, while the lowest number came from the Southern region. Based on the results, it is safe to assume that the determined mycotoxins are mostly produced by the Penicillium rather than the Aspergillusspecies.

Keywords:
Mycotoxincontamination; Traditional Meat Products; LC-MS/MS; Geographical Region.

Biography

Prof PhD Jelka Pleadin is a Master of Biotechnological Engineering having a PhD degree in Biotechnical Sciences. She is a Scientific Advisor in Tenure and the Head of the Laboratory for Analytical Chemistry of the Croatian Veterinary Institute in Zagreb. Her research is devoted to the development and application of analytical methods for determination of food of animal origin quality as also detection and quantification of residues of forbidden substances, pharmacokinetics, pharmacodynamics and toxic effects of different contaminates. From 2011 she is lecturer within the frame of undergraduate and postgraduate vocational studies in the field of food quality & safety at the University of Zagreb, Osijek and Mostar. She published one university book, ten book chapters and over 400 professional and scientific papers in indexed foreign and domestic journals. She currently acts in the capacity of chief project coordinator and team member of several national and international scientific and expert projects concerned with food quality, safety and authenticity. She was a member of numerous Scientific and Organizing Committees and an invited lecturer at several national and international scientific meetings. She was awarded the 2016 National Science Award in recognition of her outstanding achievements in the field of Biotechnical Sciences. Prof PhD Jelka Pleadin is currently the President of the Scientific Council of the Croatian Veterinary Institute.

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Natural Deep Eutectic Solvents and their Potential Application in Food Industry

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Abstract

The food industry faces the challenges of sustainable production due to high negative impact of the food industry on the environment and increasing demand for food products due to rising World population. To tackle such challenges food industry requires development of innovative and eco-friendly solutions to exploit agro-food waste and by-products as natural resources for the next generation of nutraceuticals, functional food products, bioenergy, chemicals, pharmaceuticals, and other high value-added products. These solutions should also be aligned with the principles of "green chemistry"1. One of the potential solutions could be the usage of natural deep eutectic solvents (NADES) composed only of edible, recyclable, less or non-toxic compounds which are predominantly present in nature1/2/3. More precisely, organic acids, water, sugars, fatty acids, organic salts, amino acids, terpenes, alcohols, and other compounds which are already utilized by the food industry, can be mixed in the appropriate ratio to generate solvents with specific features suitable for a wide range of applications in the food industry3. Since large number of possible NADES combinations can be designed these solvents could be utilized as a medium for chemical reactions (e.g. hydrolysis), extraction medium for natural polar or non-polar compounds (e.g. polyphenols, carotenoids), stabilization medium of extracted compounds etc 1/2/3/4. Due to NADES edible and nontoxic properties obtained extracts are ready-to-use and in certain cases may be applied in food products without additional separation technology which reduces cost of food production. One of the examples is application of NADES to recover polyphenols from food by-products such are raspberry seeds and wild thyme herbal dust and extracts direct incorporation in functional ice tea like beverages 1/2/5.

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Keywords:
NADES; Green Solvents; Food Application; Beverages.

Biography

Dr. Nemanja Teslić is a research associate at the Institute of food technology, University of Novi Sad. In 2012 he finished bachelor studies while in 2013 he earned his master degree, both at the food technology study program, Faculty of Technology, University of Novi Sad. In 2014 he was awarded with JoinEUsee PENTA scholarship for full PhD studies on which he enrolls at the Department of agriculture and food technology and science, University of Bologna, Italy. In 2018 he earned his PhD in agriculture, food and environmental technologies and science. In 2018 he started working at the Institute of food technology with the occupation at national project „New products based on cereals and pseudocereals from organic production“. He is participating on a bilateral project with Slovenia titled „Green extraction techniques for obtaining valuable functional additives to beer“. Also, he is currently a team leader of work package on the national project (PROMIS) titled „Natural Deep Eutectic Solvents for Green Agri-Food Solutions“ and participating on the national project (IDEJE) Novel extracts and bioactive compounds from under-utilized resources for high-value applications“. His current field of research is valorization of bioactive compounds from food industry by-products and agricultural waste by novel green extraction techniques (e.g. supercritical fluid extraction and subcritical fluid extraction) and solvents (NADES). Besides extraction techniques works on HPLC-FLD/DAD, LC-MS/MS, and GC-MS/MS. He is the author and co-author of more than 50 scientific journal manuscripts, book chapters, and publications from scientific conferences. He was twice invited as a speaker. In 2019 he received award “R. Ferrarini” for the best PhD dissertation in viticulture issued by the Italian association of enology and viticulture. In 2021 he received award for the best young investigator issued by the Institute of Food Technology in Novi Sad.

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Consumer Behaviours for Food Consumption and Safety during the COVID-19 Pandemic in Turkiye

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Abstract

The COVID-19 pandemic, one of the greatest disasters in the entire history of humanity, was declared by the World Health Organization as a pandemic that threatens public health. According to the Ministry of Health of the Republic of Türkiye, the first COVID-19 case in Turkey was reported on March 9, 2020, and total number of cases and deathsas of July 2022 are 15.524.071 and 99.184 respectively. Globally, 29 July 2022, there have been 572.239.451 confirmed cases of COVID-19, including 6.390.401 deaths, reported to WHO. As of 25 July 2022, a total of 12.248.795.623 vaccine doses have been administered.

The COVID-19 pandemic has made the importance of keeping the food supply healthy and sustainable much more visible. This situation was revealed the importance of food safety, which is aimed to offer consumption physically, chemically and microbiologically the best convenient food.Food safety is one of the important areas of public health, and it has become very important to improve the health literacy of the society in this area. The COVİD-19 pandemic influenced the food consumption habits of society and food safety approach of consumers in connection with the improving the society's awareness of health literacy.The objective of this quantitative study was to determine the changes in the food consumption habits and food safety approach of consumers in different social groups during the COVID-19. As a data collection tool in the research, a survey developed in line with the research purpose and created by the literature review and taking expert opinions was used. This study was conducted online with 2400 adult individuals aged between 18 and 50 and older belonging to different socio-economic statusliving in different regions of Türkiye, during COVID-19 pandemic and voluntarily agreeing to participate in the research, using a questionnaire and one of the data collection techniques, CAPI (Computer-Assisted Personal Interviewing methodology, which is a face-to-facesurvey data collection method).

According to the research findings, it was determined that the consumers in Türkiye give the most importance to the expiry date, label information, quality and taste criteria when purchasing food products.In Türkiye, three out of every five consumers find the prices better in the past while shopping for food, and only 33.9% of consumers have an idea about the concept of food safety. The findings obtained because of the research will enable us to reveal how our consumer's knowledge, attitudes and behaviours are reshaped during important public health problems that have the potential to affect the whole society, such as pandemics, and this reshaped knowledge, attitude and behaviour. Thus, it is aimed that the obtained data will provide an opportunity to evaluate the society's perception of food trust in a holistic manner,

from food shopping to the production stage.

Keywords:
Food Safety; COVID-19 Pandemic; Consumer Behaviours.

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Biography

İrfan Erol, graduated from Ankara University, Faculty of Veterinary Medicine in 1985. He earned his Ph.D. degree from Freie University, Berlin, Faculty of Veterinary Medicine, Institute of Food Hygiene in Germany, between 1987-1991. He became an associate professor in October 1993 and a professor in March 1999. He worked as a visiting scientist at Freie University, Berlin in 1996 and at University of Wisconsin-Madison, in the USA in 2000 and 2001. His specialties are food microbiology and molecular microbiology, food safety and public health. He is editor of two books and writer of five book chapters, and he published 75 research and 15 review papers, and he has participated in 170 national-international congresses. He served as a representative of Turkey at WVA and FVE, a member of Council of Higher Education-Inter University Council, a member of Turkish Scientific and Technological Council, a member of Scientific Advisory Committee of ILSI, a member of the Advisory Board of EFSA, and national representative at Codex Alimentarius Committee. He was Chair of 32nd World Veterinary Congress. He was head of the Department of Food Hygiene and Technology at the School of Veterinary Medicine (2003 and 2012).

Prof. Dr. İrfan Erol was Director General of the Food and Control at the Ministry of Food Agriculture and Livestock, also CVO and OIE Delegate between Feb. 2012 to Feb. 2016. Currently he is working as faculty member at the School of Public Health of Eastern Mediterranean University and Atılım University.

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Development of Powder Products using Health Functional Food Ingredients for Improvement of Immunity, Bowel Movement, and Blood Cholesterol Targeting the Elderly Target Consumers

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Abstract

Due to age-associated immune dysfunction, the elderly suffer from pneumonia and other diseases by decreasing anti-oxidant and anti-inflammatory functions, resulting in a reduced quality of life. Another major social problem is the decrease in bowel movement ability by decreasing physical activity with aging. In addition, as the economy develops and income rises, the increase in metabolic syndrome of the elderly, such as obesity and diabetes, is a major health and medical and social problem. In particular, dyslipidemia, such as high blood cholesterol levels, is a major problem among metabolic syndrome, which is mainly caused by abdominal obesity in the elderly. Therefore, we intend to develop general powder foods capable of functional labeling by using raw materials of health functional food that can improve immunity, bowel movement, and blood cholesterol, which are most necessary for older generations. During powder products development, we control the formulation and functional characteristics. Also, process development and distribution conditions are set in detail to maintain the convenience of use, stability, and content of functional components. In this study, we aimed to improve the quality of life of the older generation by developing powder products capable of functional labeling and advertisement.

Keywords

Powder Products and Elderly Target Consumers; Immunity; Bowel Movement; Blood Cholesterol.

Biography

Boo-Yong Lee is a Professor of Food Science and Biotechnology, whose main research interest broadly covers Functional Foods & Nutrigenomics. He earned his master's and doctoral degrees from Korea University and has an extensive experience at the Korean Society of Food Science and Nutrition and the Korean Society of Ginseng for almost 20 years.

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Lactic Acid Fermentation of Beetroot: Physicochemical Properties of Beetroot Leaven and Fermented Beetroot Tissue

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[2]Department of Materials Technology and Machinery, University of Warmia and Mazury in Olsztyn, Oczapowskiego 11 St., 10-719 Olsztyn, Poland

Abstract

Purpose/Objectives

Due to the lack of literature data on optimalization of lactic acid fermentation of beetroots the aim of the study was to determine the optimal time and temperature of the process as well as thickness of beetroots slices to obtain the product, i.e., leaven and fermented beets with the most desired physicochemical properties.

Materials/Methods

The lactic fermentation process of beetroots was carried out for a maximum period of up to 15 days. The thickness of the beetroot slices (2, 4, 6mm) and the process temperature (10, 20, 30^{0}C) were used as variable process parameters. During the process, the physicochemical properties of the fermented beetroot (water content, density, color, hardness, cohesiveness, chewiness, springiness and gumminess) and beet leaven (total acidity, pH, turbidity, color) were determined.

Results and Conclusions

The results of the study are very promising and fill the knowledge gap related to the influence of material properties (slices thickness) as well as temperature and time of fermentation on the physicochemical properties of leaven and fermented beetroots. The results of the present study show that the selection of the appropriate parameters of fermentation process helps to tailor the physicochemical properties of leaven and fermented beetroots based on their functional properties.

Keywords

Lactic Acid Fermentation; Beetroots; Beetroot Leaven; Physicochemical Properties.

Biography

Izabela Staniszewska is a PhD student at the University of Warmia and Mazury in Olsztyn, Poland in the disciplines of Food and Nutrition Technology and Mechanical Engineering.Her scientific interests include, first of all, issues related to heat and mass transfer processes in agri-food processing. Her research is mainly related to the use of microwaves, ultrasound and reduced pressure as techniques supporting the dehydration processes of biological materials. PhD student Izabela Staniszewska is currently participating in research carried out as part of a project financed by the Polish National Science Center entitled "The effect of ultrasound, microwaves, infrared radiation and reducedpressure on the dehydration and drying kinetics of beetroots", project registration no. 2020/37/B/NZ9/00687.According to Web of Science (as of 06/08/2022), She has an H index of 3, the number of publications in the Web of Science research database is 9, the sum of citations is 20 (excluding self-citations).

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Microwave-Assisted Drying of Fermented Beetroot

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Abstract

The aim of this article is to present a modern method of convective drying intensification caused by the action of microwaves. Fermented beetroot juice contains a lot of fiber, phosphorus, magnesium, iron, and calcium. It is a source of vitamins C, A, E, K, PP, and B vitamins. Generally, fermented beetroot juice is a finished product, while fermented beetroots often constitute a waste. As fermented beetroots still have a high nutritional value, an interesting idea is to utilize them and produce dried fermented beetroot chips. Microwave drying is an interesting alternative to convective drying. However, microwaves should be effectively used in the drying process, mainly to improve the transport of water from the inside of the material to its surface. In this study, fermented beetroots were subjected to microwave-assisted drying. The experimental kinetics tests were conducted in a hybrid PROMISTECH dryer equipped with a microwave generator. Microwaves were served in pulses to heat the inside of the material, causing a temperature gradient and diffusion of water to the surface of beetroots. Most of the energy necessary for water evaporation in the system was associated with the use of forced hot airflow, while microwaves of low power only improved the transmission of water to the surface of the particles. The intensification of heat and mass transfer processes due to microwave-induced heating effect was analyzed. The drying kinetics, effective moisture diffusivity, drying time, changes in material temperature, and specific energy consumption were evaluated under different conditions and optimal conditions were defined. The obtained results allow stating that microwaves make the drying process more effective and enhance the drying efficiency of fermented beetroots without significant elevation of their temperature.

Keywords

Fermented Beetroots; Microwaves; Drying Kinetic; Energy Usage.

Biography

Magdalena Zielinska is a Professor at the Department of Systems Engineering, University of Warmia and Mazury in Olsztyn, Poland. She got her Master's and Ph.D. degrees in Food Science at the University of Warmia and Mazury in Olsztyn, Poland. She did her postdoc work at the Department of Biosystems Engineering, Faculty of Engineering, University of Manitoba, Winnipeg, Canada. She is the author and co-author of more than 70 journal and 30 conference papers on drying and dehydration of food (superheated steam drying, spouted-bed drying, fluidized-bed drying, microwave vacuum drying, heat pump assisted drying), other unit operations (cold plasma treatment, ultrasound treatment, steam blanching, etc.), heat and mass transport phenomena, physicochemical and thermo-diffusive properties of foods and food quality assessment, analytical and instrumental methods for material properties assessment, as well as mathematical modeling and optimization of unit operations. For her outstanding work, she was awarded twice in 2020 and 2021 by Stanford University in the USA among the 2 % of the best scientists in their fields in the world.

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August 18-20, 2022 | Edinburgh, Scotland

Application of Lipidomics in Lipid Profiles in Meat

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Abstract

Intramuscular fat (IMF) is an important factor affecting meat quality, which is directly related to meat flavour, juiciness and tenderness, but lipid and metabolic profiles of IMF remain unclear. The present study was conducted to investigate lipid characteristics in different parts of Dezhou donkey using lipidomics. The results show that IMF was more abundant in longissimus dorsi muscle (LDM) than rump muscle (RM) and hamstring muscle (HM), and mainly composed of triglycerides (TGs) rich in saturated fatty acid (SFAs) and monounsaturated fatty acid (MUFAs). A total of 1,143 lipids belonging to 14 subclasses were identified in donkey meat, of which 73 lipids including glycerolipids (GLs), glycerophospholipids (GPs) and sphingolipids (SPs) were significantly different and are therefore potential biomarkers in LDM vs. RM vs. HM analyses. Donkey muscle accumulated far more SFAs at the sn-3 position of TG, while more SFAs were present at the sn-1 positions of phosphatidylcholine (PC) and phosphatidylethanolamine (PE), and the percentages of SFAs at the three positions in TG, PC and PE in the LDM group were much higher. The abundance of MUFAs at the sn-2 positions of TG, PC and PE was significantly greater than in sn-1 or 3 positions, and the percentages of 18:1n-9 at the sn-1 and 2 position of TGs in LDM were significantly higher than in RM and HM groups. Polyunsaturated fatty acids tended to occur at the sn-1 position in TG, but at the sn-2 position in PC and PE. Significantly differential lipids were mainly enriched in GP, GL and SP pathways, all considered key pathways for regulating IMF. The results reveal the components, structures and metabolic pathways of lipid molecules in donkey meat, and provide novel insight into the development of donkey meat products and accurate regulation of IMF.

Keywords

Lipidomics; Lipid Profiles; Meat; Application.

Biography

Since 2020 Dr. Mengmeng Li works at the Liaocheng Research Institute of Donkey High-Efficiency Breeding and Ecological Feeding, College of Agronomy and Agricultural Engineering, Liaocheng University. He has published more than 30 papers in famous journals such as Journal of Agricultural and Food Chemistry, Frontiers in Nutrition and Journal of Food Science. He evaluated the quality of meat and analyzed the lipid profiles of donkey meat in terms of lipid molecules and metabolic characteristics for the first time, provids a new perspective for understanding of the nutritional value of donkey meat and improves intramuscular lipid deposition. He established a lipidomics technology based on liquid chromatography-mass spectrometry for meat, which provides technical support for the application of meat composition analysis, quality discrimination, authenticity identification and origin traceability.

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August 18-20, 2022 | Edinburgh, Scotland

Complexation and Conjugation of Gallic Acid onto Pectin by Ultrasound Frequency Intermedia

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Abstract

The functionalization of polysaccharides by complexation and conjugationto the polyphenolshas been taking a keen interest in the field of food and health sciencesdue to allow to improvestheir technofunctional and bioactive properties. Several non-scalable and time-consuming chemical and enzymatic methods have been developed to obtain polysaccharides binding to the polyphenols, being the most used the redox-pair (ascorbic acid/H2O2). In this context, in the present study the functionalization of pectinby complexation and conjugation to gallic acid (GA) was carried out by ultrasound frequency intermediate (USFI) in presence or absence (USFI-alone) of ascorbic acid (USFI-Aa) and compared with the conventional redox-pair method. As negative control (pectin alone) was used. The USFI treatment was performance at 582 kHz, Meinhardt Ultrasonic E802/T/M 250 W with an amplitude of 90%. The production of hydroxyl radical by USFI was measured by chemical dosimetry method triiodide, the antioxidant capacity of pectin alone and binding to the GA was measured by spectrophotometric ABTS and DPPH assays and the conjugation and complexation between pectin and GA was confirmed using FTIR and UV-Vis first derivative spectrophotometry. The first derivative of FTIR and UV-Vis spectra confirmed the complexation and conjugation of pectin with gallic acid for USFI-alone and USFI-Aa. A bathochromic effect in the complexation and conjugation were observed. The complexation and conjugation of GA-pectin produced by USFI as well redox pair method indicated similarly behaviour in presence of ascorbic acid. The production of hydroxyl or ascorbyl radical associated with complexation and conjugation was about 5.3 and 3.6 µM/min in two times region of USFI. The antioxidant capacity and phenolic compound showed that USFI treatmentsand redox-pair method werehigher than negative control. In conclusion, USFI could be an efficient method for production of gallic acid-pectin with improved prebiotic properties and other novel functionalized polysaccharides with phenolic compounds because it will reduce the production time and allow the scaling of the process.

Keywords

Intermedia Frequency Ultrasonic; Complexation; Conjugation; Pectin.

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International Meet on Food Science and Technology
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The Importance of Food Source Natural Flavonoid Compound in Obesity related Inflammation

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Abstract

Flavonoids are a large number of small molecules with polyphenolic structure which can be found in various plants, fruits, grains, flowers, vegetables, wine and tea. these natural products have many beneficial effects associated with various diseases, including Alzheimer's disease (AD), cancer, Atherosclerosis, anti-vascular disease, and so on. Apigenin (Api, 4,5,7-trihydroxyflavone) is a naturally occurring plant flavonoid abundant in various fruits and vegetables. It has lately gained attention as a beneficial and healthy compound because of its various biological effects and low intrinsic toxicity. In our research, we find that apigenin binds and activates PPARγ by acting as a modulator. Activation of PPARγ by apigenin blocks p65 translocation into nuclei through inhibition of p65/PPARγ complex translocation into nuclei, thereby decreasing NF-κB activation and favoringM2 macrophage polarization. In HFD and ob/ob mice, apigenin significantly reverses M1 macrophage into M2 and reduces alleviate inflammation. Strikingly, apigenin reduces liver and muscular steatosis, decreases the levels of ALT, AST, TC and TG, improving glucose resistance obviously. Unlike rosiglitazone, apigenin does not cause significant weight gain, osteoporosis et al. Our findings identify apigenin as a modulator of PPARγ and a potential lead compound for treatment of metabolic disorders. The same effect is also found in another flavonoid compound chrysin. This work suggests the the importance of food source natural flavonoid compound in obesity related inflammation.

Keywords

Macrophages; Obesity Related Diseases; PPARγ; Flavonoid.

Biography

Dr. Xiujing Feng works in the Shandong first medical university since 2020. Her research focuses on the pharmacology of chronic inflammatory diseases such as NAFLD. So far, she has published 30 more than papers which are published in the journal of EbioMedicine, Biochemical Pharmacology, nature communication and so on, which are cited by the peer reviewers more than 600 times. She found the food source flavonoids compounds such as apigenin and chrysin could bind and target PPARγ to attenuate high fat diet induced inflammation and metabolic disorders via regulating macrophage polarization. Importantly, this compound is safe and effective than the PPARγ classical agonist rosiglitazone in treating the obesity related diseases, supplying a potential lead compound for treatment of metabolic disorders.

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Active Edible Coatings to Enhance Quality and Storability of Food Products

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Abstract

Nature-sourced active edible active materials can enhance quality and storability of food products and protect them from microbial, environmental and mechanical damages. The active coatings based on such materials also respond to customer demands for safe and healthy approaches for food quality management and satisfy ecologic concerns. In our laboratory, we are utilizing advanced material science approaches to develop biopolymer-based active materials for edible coatings. Our active biopolymer-based coatings and films were successfully implemented to improve quality and prolong storability of various fruits and vegetables, in addition, this approach was found to be outstandingly effective for enhancement of ready to eat fresh-cut produce.

Keywords: Biopolymers; Edible Coating; Food Storability.

Biography

Elena Poverenov received her PhD in Organic Chemistry in Weizmann Institute of Science. Since 2011, she is PI at Volcani Institute, ARO. Elena's agenda is introducing advanced chemistry and nanotechnology approaches in the field of agriculture and food. Her research lab developed several new concepts that made a high general impact on the material and agricultural sciences worldwide. Elena have published 64 articles in leading international journals, gave 30 invited lectures and organized conferences. For introducing new research directions, Elena received numerous excellence prizes. Elena is a Head of the Multidisciplinary Agro-nanotechnology and Advanced Materials Research Center, ARO.

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International Meet on Food Science and Technology
August 18-20, 2022 | Edinburgh, Scotland

Saccharomycopsis Fibuligera proved as an Aroma-Enhancing Strain in Sweet Rice Wine Fermentation by Headspace Solid-Phase Microextraction/Gc-Ms (Hs-Spme/Gc-Ms) and Transcriptomic Analysis

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Abstract

Currently, traditional rice wine has to confront food safety issues such as contamination with pathogenic bacteria, and commercial sweet rice wine is lack of fragrance. Therefore, from the screening of non-Saccharomyces yeast strains as an entry point, headspace solid-phase microextraction/gas chromatography-mass spectrometry (HS-SPME/GC-MS) and transcriptomic analysis were used for the study. a strain identified as Saccharomycopsis fibuligera that has the ability to improve the floral and honey-aroma of sweet rice wine. Compared with the rice wine with Saccharomyces cerevisiae, the strain of S. fibuligera in fermentation can significantly increase the level of caprylic acid ethyl ester, isobutanol, isopentyl acid, phenylacetaldehyde, β-phenethyl acetate, β-phenylethanol. Noticeably, the content of β-phenylethanol with floral aroma in rice wine with S. fibuligera was approximately 6 times than that in rice wine with S. cerevisiae. Furtherly, transcriptome analysis of the two strains showed that there was a total of 20660 differentially expressed genes. The top three enriched metabolic pathways in the KEGG pathway were: ribosome, amino acid biosynthesis, and carbon metabolism. In addition, the other significantly up-regulated pathways were phenylalanine, tyrosine and tryptophan biosynthesis, alanine, aspartate and glutamate metabolism, tyrosine metabolism, valine, leucine and isoleucine biosynthesis, arginine and proline metabolism and glycine, serine and threonine metabolism pathways. Based on the Ehrlich pathway, three genes were selected for the RT-qPCR verification test, they were aromatic amino acid aminotransferases ARO9, ARO10 and alcohol dehydrogenase ADH2. The expression level in S. fibuligera was higher than its expression level in S. cerevisiae. According to transcriptome results show that S. fibuligera was more active in amino acid metabolism and generated more aroma substances than S. cerevisiae, while S. cerevisiae was more active in cell proliferation, differentiation and glucose metabolism pathways. Therefore, the differences in volatiles in sweet rice wine were the results of the differences in the transcriptome of S. fibuligera and S. cerevisiae, especially the genes correlated to amino acid metabolism. Finally, it is obvious that S. fibuligera can be used as an aroma-enhancing strain in the fermentation of sweet wine, which is verified from not only the transcriptomic analysis but also the prominent ability in producing aroma volatiles by HS-SPME/GC-MS.

Keywords
Saccharomycopsis Fibuligera; Sweet Rice Wine; HS-SPME/GC-MS; Transcriptomic Analysis.

Biography

Yurong Yang is currently working toward the Ph.D. degree in Food science and engineering with the College of Food Science and Engineering, Central South University of Forestry and Technology, Changsha, China. Her research interests include fermentation, food flavour analysis. Haiyan Zhong and Tao Yang are professors at College of Food Science and Engineering, Central South University of Forestry and Technology, Changsha, China.

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International Meet on Food Science and Technology
August 18-20, 2022 | Edinburgh, Scotland

Ingredients Functionality of Gluten-Free Bread on Ohmic Baking

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Abstract

Due to the absence of gluten, several challenges arise during gluten-free (GF) bread baking, affecting the mid-and-end- product quality. The main approach to overcome this issue is to combine certain functional ingredients and additives, to partially simulate wheat bread properties. In addition, the optimization of the baking process may contribute to improved product quality. A recent and very promising alternative to conventional baking is the use of ohmic heating (OH). Due to its volumetric and uniform heating principle, crumb development during baking and consequently bread volume is improved, which enhances the overall GF bread quality. This study attempts to investigate the influence of the main ingredients of GF bread, namely starch, protein, and fat. For this purpose, the physical and chemical properties of different starches (corn, wheat, potato, cassava) and GF flours (rice, buckwheat) were evaluated. The rheological properties of GF batter were affected by the type of starch and the amount of water. Two categories of required water content or viscosity ranges were defined for estimating final GF bread properties: low water content with a viscosity range of 47.12–56.20 Pa•s for B-type starches and medium water content with a low to medium viscosity range of 2.29–15.86 Pa•s for A-type starches. Apart from starch, protein plays a crucial role in gas cell stabilization. The effect of non-gluten proteins from different sources (plant and animal) on the rheological behaviour of GF batter (pasting properties, rheology, and foam stability) and bread quality after baking with conventional and ohmic heating. According to the correlation matrix, protein solubility was considered to be crucial in influencing foaming and emulsification behaviour, leading to improved GF bread properties. Amongst proteins, egg albumin and potato protein exhibited superior functionality in GF bread; in particular, potato protein produced breads with the highest volume in both baking methods and could be a good candidate for replacing egg albumin. Fat addition plays an important role, especially during storage, as it influences the bread staling. Commercial fat with different sources and structures was used and bread staling of ohmic and conventional-baked bread was evaluated at a certain time. In general, palm oil dominated with palmitic acid showed lower crumb firmness during storage. This research provides a deeper understanding of the functionality of GF bread ingredients and how these may affect critical parameters during the OH processing.

Keywords
Ingredient Functionality; Gluten-Free Bread; Ohmic Baking; Rheology.

Biography

Elok waziiroh is a Ph.D. student at the Institute of Food Technology, BOKU, and Vienna. She developed an early interest in Gluten-free (GF) product, for she grew up in the eastern country (Indonesia), which cannot produce wheat but consume a massive amount of wheat product. Meanwhile, GF products are gaining scientists' interest in Western countries as the number of celiac patients grows. Starting her Ph.D. in 2019 with a topic of ohmic heating of gluten-free bread: a comprehensive study on the ingredient functionality, Elok has been investigating a fundamental knowledge of how each ingredient contributes to increasing GF bread quality using ohmic heating. During her research, Elok published two scientific papers related to her field. The first paper covered an understanding of how the rheological properties of GF batter are affected by the type of starch and the amount of water and how they influence GF bread properties when baked with two methods (conventional oven, ohmic heating). The second publication was a review article on GF bread ingredient functionality on ohmic baked heating, including the effect and the potential application on bread making.

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August 18-20, 2022 | Edinburgh, Scotland

Novel and Sustainable Approaches for Extraction of Bio Active Components from Citrus Peel

Dr Anupama Singh, Professor and Head

Deptt of Food Engineering, NIFTEM

Abstract

In recent years, green extraction technologies have attracted the industrial interest because of various advantages. Since, the phenomenon of these techniques is considerably different than conventional solvent extraction, understanding the mechanism of mass transfer and insight in to the process of mass transfer kinetics taking place during extraction process are the key requirement for design and scale-up of the extraction system for industrial scale application. Conventional extraction techniques have numerous setbacks like high energy consumption, toxic residue, uses huge amount of solvent and time consuming. Hence, there is a need of novel green extraction techniques to eradicate the demerits of traditional extraction techniques at the same time to higher yield and higher quality. Novel extraction technologies like microwave, ultrasound, and enzyme assisted extraction techniques for bio active compounds extraction from citrus peel waste can be used for enhanced yield and quality which can further be used in food industries. The present article explores the various techniques and related parameters optimization process which be quite helpful for modeling and understanding the extraction conditions.

Key words

Green Extraction Techniques; Waste Valorization; Bio Active Compounds; Optimization.

Biography

Dr. Anupama Singh has over 27 years of academic experience in the agri-food processing sectors. Her research interest includes Bio waste utilization, Sustainable food processing novel technologies, product development and value addition. Dr. Singh has received various accolades, recognitions and fellowships and awards at the national and international levels, including the prestigious Norman Borlaug Fellowship by USDA/ICAR and the National Fellow Award by ICAR, India. She has executed multiple R&D and Consultancy projects. She has guided 4 doctoral researches, 28 M. Tech. Thesis and many research projects at the graduate level. She has over 290 publications to her credit including research papers/articles in various peer-reviewed international and national journals, book chapters, technical bulletins, status reports, articles etc. She has presented more than 100 research papers in various National &International conferences. After a sterling career, spanning over 25 year, at GB Pant University of Agriculture & Technology, Pantnagar, and Professor Anupama Singh is currently Dean, Post Graduate Studies and Head at Department of Food Engineering, National Institute of Food Technology Entrepreneurship and Management (NIFTEM), India.

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August 18-20, 2022 | Edinburgh, Scotland

Biomimetic Surfaces from Vegetable Leaves and their Performance in Early-Stage Biofouling Prevention

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Abstract

Food contact surfaces are usually colonized by microorganisms, even following cleaning and disinfection. They can grow as biofilms, which are contamination sources for finished products, reducing their shelf-life and causing foodborne diseases. One way to reduce fouling is to create naturally cleaning surfaces based on biomimetic designs. Four self-cleaning leaves (Tenderheart cabbage, Cauliflower, White cabbage, and Leek) were analysed for their surface properties and synthetic replicas of each produced. The leaves and surfaces were subjected to attachment, adhesion, and retention assays using Escherichia coli and Listeria monocytogenes. For the attachment assays, the lowest cell numbers occurred on the least hydrophobic, smooth surfaces. Following the adhesion assays, the use of surfaces with intermediate roughness (Sq) and free energy of interaction (ΔGiwi) values demonstrated the lowest bacterial adhesion. However, following the retention assays, the chemistry of the surface may have affected the results since opposite surface effects were shown to reduce cell retention on the leaf, which was least hydrophobic, and on the biomimetic replicate surfaces, which were rougher and hydrophobic. Although the surfaces were promising in reducing bacterial binding, the results suggest that different experimental assays exerted varying influences on the conclusions. This work demonstrates that, in addition to surface attributes such as hydrophobicity and roughness, biological factors, environment, and the type of methodologies used need to be taken into consideration.

Keywords
Biomimetic Surfaces; Leaves; Food Industry; Biofouling.

Biography

Luciana Gomes is a Postdoctoral Researcher in the Bio film Engineering Laboratory (BEL) of the Laboratory for Process Engineering, Environment, Biotechnology and Energy (LEPABE), and an Invited Assistant Professor at the Department of Chemical Engineering of the Faculty of Engineering of the University of Porto (FEUP), Portugal. She completed her Ph.D. in Chemical and Biological Engineering at the University of Porto in 2016 on the use of Escherichia coli bio films for the synthesis of recombinant proteins. At the moment, her research interests are focused on antibiofilm surfaces for industrial, biomedical, and marine settings. This field of research requires high knowledge in the setup and operation of biofilm reactors such as flow cells, and advanced techniques such as OP, AFM, SEM-EDS, epifluorescence microscopy, and CLSM for the characterization of surfaces and biofilms, and she is a proficient user of these techniques. Luciana Gomes was supervisor/co-supervisor of 2 Ph.D. students (ongoing) and 14 Master's students in academic and industrial environments. She has published 48 peer-reviewed papers (18 as first author and 5 as the corresponding author) and 10 book chapters, and participated in numerous international conferences and courses with the financial support of several funding agencies (25 oral communications and 29 posters). She is a team member of the EU-funded Surf SAFE project ("Surface modification to increase microbial Safety in the food industry"; Grant agreement ID: 952471; Website: https://surfsafeproject.eu/). This project is aimed at the field of surface modification and biofilm analysis necessary to enable the development of tailor-made antifouling and antimicrobial, non-toxic surfaces inspired by nature.

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August 18-20, 2022 | Edinburgh, Scotland

NMR methods in Food Fraud Detection

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Abstract

NMR is the elective technique for structure elucidation of molecules and nowadays is largely adopted to investigate complex mixtures. As a matter of fact, NMR has been largely adopted in food characterization assessment in these last decades. In the era of the "omics" techniques, NMR was rapidly enrolled as one of the most powerful methods to approach metabolomics studies. Its analytical use, characterized by rapid and reproducible measurements, made it a routinely technique providing the identification of a wide range of chemical compounds within the mixture under investigation simultaneously, revealing potential markers, disclosing sophisticated frauds or addressing the geographical origin. Nowadays high quality or guaranteed foods are subjected to fraudulent practices which cause high economic damages to food industries and decrease the consumer confidence to labelled declarations. The demands of highly refined characterization tools are strongly required to protect consumers and the productions of valuable foods. The large potentiality of NMR spectroscopy is here presented through specific applications on saffron and honey, and using different approaches focused on authentication process of food products.

Keywords

NMR; Honey; Fraud; Saffron.

Biography

Roberto Consonni graduated in Chemistry at University of Milan in 1985. I am first researcher at National research Council at Institute of Chemical Sciences and Technologies "G. Natta" in Milan. I am an NMR expert, working on different topics, covering structural characterization and metabolomic studies applied to: biomolecules, synthetic and bio-polymers, mixtures, extracts, foods, nutraceuticals, single molecules and complexes. Topics on foods are covering issues like fraud detection, quality, shelf life, geographical origin. To date, I have more than 130 peer reviewed publications, with 12 book chapters in food chemistry and 2 patents. My Hindex is 31. I am reviewer of several international journals. I am also working at CEN-TC 460 "Food Authenticity" and at UNI.

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International Meet on Food Science and Technology
August 18-20, 2022 | Edinburgh, Scotland

The Ability of Dietary Fibres from Selectedvegetables and Fruits in Lowering the Glycemic Index of Processed Foods

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Abstract

Presently, the prevalence of non-communicable diseases (NCDs) is skyrocketing with the number of diabetic individuals expected to rise from 171 million in 2000 to 366 million in 2030. This is the main cause of morbidity and mortality all around the continents because it can lead to complications in health and affect the quality of life and wellbeing. An increase in the quantities and varieties of fibre-containing foods may prevent or treat many of the NCDs (including obesity, CVD and diabetes mellitus). An ideal recommended in take of dietary fibre (DF) levelsis 20-35g/day. However, the average in take of DF among the global population particularly Malaysian adults is alarmingly low, which is only 16g/day. The hiding/ incorporation of DF from vegetables and fruit in processed foods is one of the innovative strategies to increase the intakeof DF. The present study aims to investigate the effect of incorporating vegetables, fruits and oyster mushrooms onglycemicindex values of processed foods.Our study reveals that DF enhances glycemic response by raising the rate of absorption of glucose in the small intestine, thereby lowering the GI value. A low GI diet will make us feel full for a longer duration while minimizing overeating at the same time. A low GI diet is beneficial to reduce the risks and complications of different health conditions such as diabetes. Our research also shows the incorporation of agro-based resources from banana (over-ripe banana), oystermushroom and cornlettes in a few baked-based products such as cookies, pasta, cakes, muffins and flatbread scientifically proven in improving DF content while lowering GI values (below than 55). In sensory evaluation, the incorporation of cornlettes, over ripe banana and oyster mushroom in selected processed foods is well accepted by the consumers. In short, various types of agricultural resources can be exploited to minimize waste and at the same time be able to promote their prowess as functional and healthy foods when formulated in various processed food products.

Keywords

Cornlettes; Glycemicindex; Oystermush Room and Overripe Banana

Biography

WanRosli Wan Ishak is a professor of Nutrition Program at the School of Health Sciences (SHS), UniversitiSains Malaysia (USM), Health Campus, Kota Bharu, Kelantan, Malaysia. Currently, he is a Dean of SHS of USM. His research theme emphasizes more on the utilization of natural agricultural by-products into popularly consume processed foods. Various low glycemic index (GI) based on these agricultural by-products has been developed.Wan Rosli has been appointed as Junior Faculty Member from SEAMEO-TROPMED RCCN, Indonesia in the Training of Leadership for Nutritionists in Jakarta Indonesia. He was selected among Top 10 Innovators for SYMBIOSIS project funded by Malaysian Technology Development of Malaysia (MTDC) to facilitate the commercialization of functional and health cookies from oyster mushroom (Nutri-Mush® Cookies).His research interest is focusing on the development of functional food products from agricultural by-products such as young corn, oyster mushroom, brown rice. He has published more than 110 articles in multiples renowned journal such as Frontiers in Nutrition, Food Chemistry, International Journal of Food and Nutrition, BioMed Research International, International Food research Journal, SainsMalaysiana, British Food Journal, Molecules and many more.

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Effect of different Wood Materials on Smoked Fish Patty Produced Using Industrial Tuna (Thunnus Albacares) Offcuts

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Abstract

Fish flesh is a good source of animal protein for many communities. Fish having some unique characteristics with, high-level protein content with a balanced profile of amino acids, polyunsaturated and essential fatty acids (with Omega-3 fatty acids), and a low level of harmful cholesterol and saturated fat. Therefore, fish-based products are very popular among people. However, at industrial level it produces many offcuts which has less economical value and cause environmental problems. Tuna is a good source of animal protein and its offcuts can be used to develop new products. Objective was to check the effect of different wood materials on a smoked fish patty using yellowfin tuna (Thunnus albacares) offcuts. Fish patty was prepared with 77% (w/w) minced tuna, 10% (w/w) ice flakes, 10% (w/w) binders, 4% (w/w) vegetable oil and 3% (w/w) mixture of salts and other spices. Then, patties were made with 4.5 cm radius and 1 cm thickness. Proximate analysis was conducted in both raw fish and patty. Smoking was done at 200°F for 1.5 hours using an electrical mini smoker. Citronella, cinnamon and combination (1:1) was used to produce the smoke. Moisture and crude protein in tuna was 78.85±0.66% and 21.06±0.86% respectively while 58.12± .68% and 18.39±0.5% respectively in the smoked fish patty. Lipid (2.51±0.44%) and ash (1.08±0.09%) contents in fish mince were lower than smoked patty. Salmonella and Escherichia coli were negative in all smoked patties (n=3). Lipid oxidation and pH did not change significantly with storage ($p>0.05$). Lightness (L*) and yellowness (b*) had no change in all treatments but redness (a*) change in combination treatment at day 35 ($p<0.05$). Hardness, Gumminess, Chewiness did not change significantly with storage ($p>0.05$). Accordingly, fish patty with 73% (w/w) tuna off cuts, smoked with cinnamon: citronella 1:1 ratio can be considered as the best in terms of physical and chemical properties.

Keywords

Cinnamon; Citronella; Keeping Quality; Tuna off Cuts.

Biography

Prof. E.D.N.S. Abeyrathne is as a Professor of Animal Science, attached to the Department of Animal Science, Uva Wellassa University of Sri Lanka. Prof. Abeyrathne completed his Bachelor's degree in B.Sc. Agriculture Specialized in Animal Science, Faculty of Agriculture, and University of Peradeniya. And obtained his MSc in Dairy and Meat Product Technology, Postgraduate Institute of Agriculture, University of Peradeniya in 2010vand obtained his PhD in Biomodulation in 2013, from the Department of Agricultural Biotechnology, College of Agriculture and Life Science, Seoul National University, Seoul, South Korea. In addition to his contribution to the Uva Wellassa University, he is also served as a, Visiting Professor in the Department of Animal Science & Technology, Sunchon National University, Suncheon, South Korea and Visiting lecturer/examiner in Faculty of Agriculture, AQUINAS College of Higher Studies, Sri Lanka. Prof. Abeyrathne is a specialist in the area of Biomodulation, Protein Chemistry, Egg & Fish Product Technology and Food Safety and research interests are allied with the above subject areas. He is sharing his experts by being Reviewer for more than 10 National and International Journals such as Antioxidant, Food Chemistry, and Poultry Science. Food Review international. His expertise in the mentioned areas is showcased by his list of publications in INDEX journals. Currently he has more than 53 Referred journal articles, six book chapters, nine full papers in conference proceedings and 3 local and international patents. His Scopus H & i10 index is 12 with 760 publication citations in high index journals.

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Near Infrared Spectroscopy as a Quick Tool to Identify Adulteration in Coriander (Coriandrumsativum L.) Powder

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Abstract

Near Infrared (NIR) Spectroscopy is a rapid, non-destructive tool to analyse the food products qualitatively and quantitatively. In the present study NIR is used to analyse the adulteration of Coriander (Coriandrumsativum L.) powder. Coriander is considered an annual herb and spice since both its leaves and seeds are used as condiments. It is used in all of its components as a species (seeds, leaves and powder) and also used in cuisine as a flavouring agent. It is also known as Ayurveda medicine in the modern period. Cow dung was used as an adulterant. Three samples were prepared to do a pilot study on how the pure and adulterated samples behave in near infrared spectrum. It was observed that NIR spectra was sufficient to identify the pure sample, adulterant and adulterated sample using Principal Component Analysis. Further it was also studied does the water absorption bands are also affected by the adulterant used. Satisfactory results were obtained which revealed that NIR spectra alone were sufficient for classification of adulterated samples.

Keywords

Near Infrared Spectroscopy; Coriander Powder; Principal Component Analysis.

Biography

Dr. Uma Kamboj is working as an Assistant Professor at Department of Physics, School of Chemical Engineering and Physical Sciences, LPU. She has completed her PhD from AcSIR CSIR-CSIO, Chandigarh and Post graduated from Punjabi University, Patiala with Gold Medal. Her research interests are spectroscopy, chemo metric, statistical analysis, qualitative and quantitative analysis, astronomy and space physics. She was CSIR-SRF fellowship awardee 2013 and also received AMIE Graduate Eminent award 2021 from Institution of Engineers, India. She had 25+ research papers to her credit and guided masters' students in the field of Astronomy and qualitative analysis of food products. Currently working in the field of qualitative and quantitative analysis of food products and beverages using Near Infrared Spectroscopy and chemometrics. She is an Associate member of A.M.I.E., IEI (India) and Life Time Member of The Indian Science Congress Association.

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