Scientific Tracks & Sessions
Febrauary 07, 2022

Food Technology 2022





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The polysaccharides of coffee cell walls: composition, structure and their influence on the flavor

Qianfan Li and **Wei Zeng**
Zhejiang A&F University, China

As the most popular the second most consumed beverage around the worldwide, coffee brings pleasure as well as provides numerous health benefits to the peoples. The cell wall storage polysaccharide accounts for about 50% in the seed dry matter of coffee beans, most composed of galactomannan and arabinogalactan, can promote health as soluble dietary fiber. Their composition also changed dramatically during the roasting process, largely influencing the organoleptic properties of the coffee beverage. Therefor the cell wall storage polysaccharide have been attracting significant attention in the research community. The importance of cell walls to the coffee industry is not only restricted to beverage production, but also several coffee by-products which represented by high concentrations of cell wall components. These by-products include cherry husks, cherry pulps, parchment skin, silver skin, and spent coffee grounds, which are currently used or have the potential to be utilized either as food ingredients or additives, or for the downstream products such as cosmetics, pharmaceuticals, and bioethanol. Here, we discuss several aspects of coffee cell walls, including chemical composition, biosynthesis, and their influence on coffee quality, and compared the polysaccharide composition in different varieties and roasting steps. Potential cell wall–related biotechnological strategies are proposed for coffee improvements.

Speaker Biography

Qianfan Li is a Master Student of Zhejiang A&F University. He got his bachelor's degree in Shenyang Pharmaceutical University and working on Prof, Wei Zeng's lab at the Sate Key Laboratory of Silviculture, studying Plant cell wall polysaccharides, especially Arabinogalactan Protein (AGP) biosynthesis.

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What could be the future of "Cultured Meat"? Is it possible? Is it good? Is it acceptable?

Jean-François Hocquette
French Academy of Agriculture, France

Although there is a consensus about the challenges in agriculture, food and environment, the innovations developed to respond to them are varied. Among these, "cultured meat" is a subject that raises many questions to which a French conference attempted to answer in part by combining the opinions of two start-ups in the sector and of French experts in agriculture, animal husbandry and human nutrition. While culture of muscle cells is a well-known technique, many technical and economic obstacles remain to be solved in order to move to large-scale production. Although the cost has been reduced and will continue to decrease, it is still high to be competitive. In addition, scientists from academic research are asking for precise information to share, in particular about the composition of culture media and of products, as well as production efficiency. Several opinions were expressed to stress that these products could not be called "meat" from a biological, semantic and legal point of view, as well as under Community regulations, they are considered as "novel foods". Regarding the environmental impact or the composition of the products, it is difficult to give precise answers because only a few academic research studies are available or conclusive. The debates focused on the available knowledge, reassuring hypotheses or concerns expressed by experts, in particular by comparison with other solutions suggested to feed humanity (such as reducing food waste or changing our agricultural practices and our eating habits). In this context, the issue of animal welfare is also central as well as the level of potential acceptance of "cultured meat" by consumers, which is still difficult to estimate.

Speaker Biography

Jean-François Hocquette is a Scientist at INRAE (the French National Research Institute for Agriculture, Food and Environment) studying muscle biology, genomics and consumer expectations related to beef eating quality. He was leader of the research team "Muscle Growth and Metabolism" (1999-2006), and of the Herbivore Research Unit (172 staff, 2006-2010). He was member of the French High Council for Evaluation of Research and Higher Education. He is working for the International Meat Research 3G Foundation and for the European Federation of Animal Science (EAAP). He is Editor of the French Meat R&D journal and of several books. He 3D Printing and Medicine Annual Congress Las Vegas, Nevada, USA | October 5-6, 2017 was awarded by the French Meat Academy and received the 2014 Animal Growth and Development Award and the 2021 Meats Award from the American Society of Animal Science. He will organize the World Congress of Animal Science in Lyon in 2023.

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Nutrition in pandemic; short communication screening pilot study of fruit seed compositions by GC–MS and their potential scenario anti ACE2 and 2rh1 receptors as a recycling possibility in the Coronavirus pandemic

Asmaa Fathi Hamouda
Alexandria University, Egypt

Since 2019, several critical effects of the coronavirus pandemic have surfaced, including its psychological problems such as depression. The World Health Organization has approved a group of drugs and vaccines. However, the world still faces novel coronavirus mutations, requiring more ideas to investigate a drug, vaccine, and phytochemical potential chemoprevention proposal. Severe acute respiratory syndrome coronavirus (SARS-CoV)-2 co-operates directly with the angiotensin-converting enzyme 2 (ACE2) to penetrate the target cells. We aim to introduce the possibility of studying seed oil extract as an anti-depression, anti-stress, anti-epinephrine receptor (PDB: 2rh1), and as potentially binding antiangiotensin-converting enzyme 2 (ACE2) agent. From our previous work we have health benefit effect from studied fruit on rats. From this point of view, we analyze the constituents of the six studied seeds' oil with gas chromatographymass spectrometry (GC-MS) by performing an AutoDock analysis of the components' potential ligands to both the 2rh1 and ACE2. We observe convenient binding conformations between the investigated receptors and the 44 phyto constituents. The AutoDock outcomes of the seeds' phytochemical GC-MS separated components reveal highly binding energy, with ACE2 higher than 2rh1. The studied seed oil contains binding energy with currently studied receptors and molecular weight, which enables it to be studied in the future as a nanoparticle against viruses, vaccines, and psychiatric drugs.

Speaker Biography

Asmaa Fathi Hamouda contributed to creating and owning, conceptualizing, work idea designing, and performing the experiments, chromatography, and AutoDock analysis, interpreting and analyzing data, writing, revising, and editing the manuscript, and explaining the results.

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Analysis of the UK flour milling industry

Musa Shavanov
Russia

Purpose: This paper present supply chain analysis of the UK flour milling industry in order to identify existing problems and propose possible improvements. In addition, this paper examines the current supply chain strategies deployed in the literature using the theoretical framework of power dependency theory.

Methodology: Data sources include publicly available industrial information, reports and literature reviews. It worth to note that it was not possible to find an exact data for processes, therefore some of the data is derived making approximations

Key findings: The paper concentrates on the upstream members of the chain which are farmers (Producers) and flour millers (Processors). This is because in the upstream part of the chain there has been a high degree of polarization in terms of the efficiency and value being realized. For example, between the processor retailer, the number of deliveries on time, no shows and quality rejection are 98%, <1% and <1% respectively, whereas between the farmer and processor these numbers are 60%, 10% and 7% respectively. As result, the upstream chain is examined in order to make leaner by reducing existing wastes. To achieve leaner supply chain, it is established that the relationships must be improved between upstream actors. However, it is not always possible for buyers and suppliers to achieve such goal due to lack of resources, internal competence, no favorable external environment and trying to improve relationship without even considering the current circumstances. Consequently, there is no an ideal way of refining the current situation. Instead, the best way to achieve a common goal is to study possible management styles and align them appropriately with power circumstances and the sourcing approaches.

Speaker Biography

Musa Shavanov is a Russian Researcher interested in Food safety, and food technology.

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Knowledge and perception of risks and use of e-cigarettes (vaping) among adults in eastern province of Saudi Arabia

Dunya Nasrallah Alfaraj
King Fahd University Hospital, Saudi Arabia

Introduction: In the last decade, electronic cigarettes have emerged and spread over the world. Different generations were developed varying in designs and features

Objectives: We examined the level of awareness, knowledge and perception of electronic cigarettes and its use among adults' residents of eastern province aging 18 and above. We also examined the reasons behind electronic cigarettes use and whether adults who were only using e-cigarette were at risk of smoking conventional tobacco and whether it did or did not help them quit smoking

Procedure/method: A cross-sectional survey was conducted, and data obtained through an online questionnaire targeting age group of 18 and above of eastern province residents. Questionnaire comprised questions such as demographic question including nationality, sex, age, academic degree, occupation and income. Next questions were testing knowledge and awareness regarding e-cigarette, safety of e-cigarette, e-cigarette usage and any side effects perceived after e-cigarette use. Last questions were whether vaping had led subjects to conventional cigarette use and whether vaping had helped them to quit smoking or not

Results: A 1080 adult in the eastern province of Saudi Arabia have participated. The prevalence of vaping among participants was 33.6% (28.3% male and 5.3% female). The highest age group of vaping was between 18-24 years accounting for 18.5%. The highest group of smokers were high school diploma carriers (18.8%). 53.8% of participants thought that E-cigs was not safer than nicotine patches or nicotine gum. 34.3% of participants thought that E-cigs were safer than regular cigarettes and tobacco products, whereas 46.6% of them thought that they are not safer. 46% of participants believed that E-cigs contained dangerous chemicals while 18.4% thought the opposite. Regarding subsequent use of traditional tobacco after E-cigs smoking, 11.6% of participants reported that they had been pushed into using traditional tobacco. 26.8% of participants reported that they quitted tobacco products after E-cigs use, whilst 16.8% reported lesser usage of tobacco products after E-cigs use. Yet 17.9% kept using traditional tobacco products in the same quantities after E-cigs use

Conclusion: Vaping is increasingly used among adult and a significant amount of people unaware of its risks. Even though it may help some people to quit traditional smoking its risks has been established and awareness should be raised.

Speaker Biography

Dunya Alfaraj is a Graduate from Medical School, Al-Faisal University, Saudi Arabia. She's double boarded in the emergency medicine (Saudi board emergency medicine and Arab board emergency medicine) and Fellowship In Clinical Research at University of California San Diego. She has done Master's Degree in Clinical Research at University of California San Diego and currently working as attending physician (Emergency Medicine Consultant) at King Fahd University Hospital, Saudi Arabia and participating in different researches (case reports, retrospective and prospective studies including -clinical trials- and systematic review and meta-analysis. She also leads research unit at emergency department at King Fahd University Hospital and monitor students and residents in conducting researches that was published at different journals and being a notable speaker at national and international conferences.

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High hydrostatic pressure treatment must insure the pathogens safety of human milk Including Bacillus cereus and the preservation of bioactive proteins particularly lipase and immune proteins

Claude Billeaud
Children Hospital Group Pellegrin Chu De Bordeaux, France

Breast milk is the nutritional reference for the child and especially for the preterm infant. Breast milk is better than donated breast milk (DHM), but if breast milk is not available, DHM is distributed by the Human Milk Bank (HMB). Raw Human Milk is better than HMB milk, but it may contain dangerous germs and it is usually milk pasteurized by a Holder treatment (62.5 °C 30 min). However, Holder does not destroy all germs and in particular in 7 to 14%, the spores of Bacillus cereus are found, and it also destroys the microbiota, lipase BSSL and immune proteins. Another technique Short Time High Temperature (STHT 72 ° C, 5-15 s) has been tried, which is imperfect, does not destroy Bacillus cereus but degrades the lipase and partially the immune proteins. Therefore, techniques that do not treat by temperature have been proposed. For more than 25 years, high hydrostatic pressure has been tried with pressures from 100 to 800 MPa. Pressures above 400 MPa can alter the immune proteins without destroying the Bacillus cereus. We propose a High Hydrostatic Pressure (HHP) with 4 pressure cycles ranging from 50-150 MPa to promote Bacillus cereus germination and a 350 MPa Pressure that destroys 106 Bacillus Cereus and retains 80-100% of Lipase, Lysozyme Lactoferin and 64% of sIGa. Other HHP techniques are being tested. We propose a literature review of these techniques.

Speaker Biography

Claude Billeaud received his MD degree from the Medical University of Bordeaux (France) in 1979 after a graduation in Human Cytogenetics (1976). He then studied pediatrics and has been the Clinical Assistant Director of Bordeaux University in the Departments of Pediatrics, Neonatology and Intensive Care since 1983. He currently serves as a pediatrician in the neonatal unit at the Children's Hospital of Bordeaux, as a scientific manager of Bordeaux-Marmande human milk bank, as a lecturer and head of research (HDR : Habilitation to direct research) in neonatal nutrition at the Medical University of Bordeaux. His particular interest in research led him to graduate in Biology and Health (1988, Bordeaux), be awarded a master in statistics applied to clinical research (1991, Montreal) and complete a PhD in Nutrition and Food Science (2000, Bordeaux). Along his career he has often been invited as a guest professor specialised in nutrition and neonatology in various universities abroad (Montreal, Corrientes in Argentina). Over the last 35 years, he has been an active member of different scientific organisations, French, European or American, specialised in perinatal medicine (neonatology, pediatrics and nutrition). In this instance, he has served as the President of the Association for Pediatric Education in Europe (A.P.E.E) since 2008 and behalf APEE he is Member of European Academy of Paediatrics (EAP). He has also been very involved in the French human milk banking association (ADLF) for more than 10 years, sharing his academic knowledge focused in nutrition and his long clinical experience in neonatology. He is currently carrying out several researches on the composition of human milk. As an expert in nutrition and perinatal medicine, he is also the author and co-author of numerous scientific publications.

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Plant virus nanoparticles: New applications for developing countries

Kathleen Hefferon
Cornell University, USA

For over two decades now, plants have been explored for their potential to act as production platforms for biopharmaceuticals, such as vaccines and monoclonal antibodies. Without a doubt, the development of plant viruses as expression vectors for pharmaceutical production have played an integral role in the emergence of plants as inexpensive and facile systems for the generation of therapeutic proteins. More recently, plant viruses have been designed as non-toxic nanoparticles which can target a variety of cancers and thus empower the immune system to slow or even reverse tumor progression. The following presentation describes the employment of plant virus expression vectors for the treatment of some of the most challenging diseases known today. The presentation concludes with a projection of the multiple avenues by which virus nanoparticles could impact developing countries..

Speaker Biography

Kathleen Hefferon received her PhD from the Department of Medical Biophysics, University of Toronto and completed her Postdoctoral Fellowship at Cornell University. Kathleen has published multiple research papers, chapters and reviews, and has written three books. Kathleen is the Fulbright Canada Research Chair of Global Food Security and has been a visiting professor at the University of Toronto over the past year. Her research interests include virus expression vectors, food security agricultural biotechnology and global health. Kathleen lives in New York with her husband and two children.

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Neuronal ensemble, memory reactivation and its effect on exercise performance

Abhishek Dhawan
ADT, India

Neuronal ensemble and brain plasticity plays an important role in memory consolidation and subsequently memory reactivation. Till date many studies have been designed to study effect of exercise, heart-rate variability and other factors on brain plasticity and memory. We present a case study in which we demonstrate effect of neuronal ensemble and memory formed during High intensity aerobic training (VO2 max) and Target Heart-Rate (THR) training and its effect of reactivation of same memory on THR and performance. Noteworthy: The reactivation and recreation of memory stimulus learned and formed during High intensity training like place, time, odor and other conditions can elevate THR to same previous peak zone even in low intensity. This demonstrates that reactivation of previously acquired memory or using stimulation of neuronal ensemble of consolidated memory during specific event of training may exert same physiological effect on exercise or body learned during memory acquisition phase. Hence as exercise has effect on memory, memories may have effect on exercise performances.

Keywords: Neuronal ensemble, Memory reactivation, THR, Peak Heart rate, Exercise

Speaker Biography

Abhishek Dhawan is in member of American Society for Nutrition, Life member of Indian Society of Nutrition, two times TEDx speaker and have received Icon award 2019 by Environment Forum of India, Bramati.

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Deciphering the *Chaetomium globosum* induced defense signaling network in tomato against Early Blight Disease

Jagmohan Singh
ICAR-Indian Agricultural Research Institute, India

Chaetomium globosum is a potential biological control agent against various plant pathogens. While most studies report on the mycoparastism and antibiosis of *C. globosum* against plant pathogenic fungi, only a few reports on its induced resistance. To gain insights into the induced defense mechanisms of *C. globosum* (Cg-2) against early blight of tomato, the suppression of disease by Cg-2 was evaluated and RNA-seq performed. There was 30.9 % reduction in disease severity in the Cg-2-treated plants. The expression of hormone signaling marker genes was analyzed by qPCR to determine the best time point for RNA sequencing. The transcriptome data revealed that 22,473 differentially expressed genes (DEGs) were expressed in tomato at 12 hpi compared to control plants, of which, 922 DEGs had a two-fold up- or down-regulation ($p<0.05$). The KEGG pathway analysis revealed that most of the DEGs represented metabolic pathways, biosynthesis of secondary metabolites, plant-pathogen interaction, chlorophyll metabolism and plant hormone signal transduction. GO analysis revealed that DEGs were mainly related to the binding and catalytic activities, metabolic processes, response to stimulus and biological regulation. The gene modulations in hormone signaling transduction, phenylpropanoid biosynthesis and MPK signaling indicated their involvement. The results revealed the activation of JA and SA signaling pathways indicating the potential involvement of both induced systemic resistance (ISR) and systemic acquired resistance (SAR) in the resistance activated by Cg-2 in tomato.

Speaker Biography

Jagmohan Singh has completed his Ph.D. from ICAR-Indian Agricultural Research Institute, New Delhi. He is the subject matter specialist (plant protection) at Guru Angad Dev Veterinary and Animal Science University, Ludhiana, India. He worked as Khorana fellow at department of plant pathology, Washington State University, USA with research work focused on potato viral diseases. He worked as visiting scholar in plant immunity laboratory at University of Edinburgh, Scotland, UK. He is currently serving as vice-chairperson of host resistance committee of American Phytopathological Society.

He was selected as IPS-APS travel grant award, to attend plant health conference by APS, USA, Aug, 2021. He received the best M.Sc. thesis award by SSDAT, at Rajasthan Agricultural Research Institute, Durgapura, Jaipur, and Oct 2018. He fetched the best poster award at national symposium by Indian Phytopathological Society at Banaras Hindu University, Varanasi, and Feb, 2019. The cover article award by agriculture letters magazine, Jul, 2020. He served as the judge at the Ohio State University, USA- Plant Sciences Symposium virtual poster competition on 26th Mar, 2021.

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Microbiological and physicochemical quality of water used for watering vegetable crops in Brazzaville

Lebonguy AA
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Use of raw water in agriculture can be a source of contamination of agricultural products with harmful consequences for consumers. Objective of this study was to assess physicochemical and bacteriological quality of irrigation water used for watering vegetables in Brazzaville. Seven water samples and two vegetable samples were taken from the trial garden in Brazzaville. Physicochemical and bacteriological parameters were determined respectively by photo spectrometry and enumeration on specific agar medium after dilution. Results showed that physicochemical parameters vary from one sample to another with relatively low contents of iron (≤0.12 mg/L), chloride (≤13.9 mg/L), ammonium (≤0.27 mg/ L), nitrate (≤0.34 mg/L) and nitrite (≤0.1 mg/L). FAMT was elevated in almost all samples with values greater than 105 CFU/ mL(g) of sample.Total Coliforms were present in almost all samples with values > 104 CFU/ml(g) of sample, except (W2) well water sample which is free of Coliforms. Finally, Pseudomonas aeruginosa were counted only in the water samples of well (W2), river water (RW1), of vegetable sprinkled with the well water (VSW) and vegetable sprinkled with the water of river (VSR). PCA and hierarchical classification separated these samples into two groups. A group containing only the R2 sample dominated by faecal coliforms and a second group composed of the other samples where FMAT and P. aeroginosa was representative. Canonical analysis, carried out with two types of parameters, shows that presence of P. aeroginosa in W2 is influenced by electrical conductivity, dissolved substance content, chlorides and chlorine. In the RW2 sample, growth of total coliforms is related to temperature, pH, iron and nitrite ions. Finally, nitrate and ammonium ions influence development of FMAT in the other samples. In conclusion, raw water used for watering vegetable crops in the trial garden of Brazzaville is of poor bacteriological quality.

Speaker Biography

Lebonguy AA obtained his unique doctorate in 2019 at Marien NGOUABI University in Brazzaville (Congo). Currently he is researcher at the National Institute for Research in Exact and Natural Sciences in the Applied Microbiology Laboratory. He also assumes the function of director of IRSEN-Brazzaville research area. He has more de 15 articles published in indexed scientific journals.

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