



IU FoST

IU FoST/CIFST Extraordinary Scientific Roundtable Discussion



COVID-19 and Food Safety and its Implications, Challenges and Solutions for the Food Industry

26 March 2020 – This summary reports on the outcome of discussions concerning the relationship between COVID-19 and food safety, with its implications, challenges and solutions for the food industry. These discussions were held on 21 March 2020 under the auspices of the Extraordinary Scientific Roundtable Discussion convened by the International Union of Food Science and Technology (IU FoST) in collaboration with the Chinese Institute of Food Science and Technology (CIFST). This Roundtable was arranged to provide preliminary guidance to the international food science and technology community and the food industry concerning the COVID-19 pandemic. IU FoST and CIFST recognized that the expert advice may be helpful to the food industry, scientific agencies and governments in ameliorating the impact of this crisis on the food supply, as well as offering suggestions for post-pandemic consideration.

Some of the main points discussed by scientists from the World Health Organization, industry and national food safety and emergency response teams, including those with direct experience in the Chinese outbreak, are:

Lessons from Wuhan:

- COVID-19 is a zoonotic disease that appears to have originated in bats, but it is likely to have gone through an intermediate species.
- Based on current epidemiological data, **the virus is not foodborne**. The virus is transmitted through droplets, or little bits of liquid, mostly through sneezing or coughing. This conclusion has been endorsed by WHO, USFDA, EFSA and several other national food safety authorities.
- The potential presence of the virus on food packaging is not currently considered sufficient to cause infection.
- The methodology used in Wuhan to control the disease should be emulated as much as possible, i.e., identifying, admitting and isolating confirmed COVID-19 cases and following up with all known contacts.
- The capacity to isolate and treat severe case needs to be adequate. In Wuhan, hotels were used for this purpose.

- The nutritional impact of isolation and social distancing on consumers indicated that while energy-level intakes remained constant, intake of vitamins, minerals and plant-based protein and fatty acids were insufficient.
- A great reduction in physical activity was noted and could have longer-term effects on obesity and non-communicable diseases.
- As a group, the elderly did not pay sufficient attention or take adequate measures to change or control diet-related risk factors.
- The provision of safe and nutritionally balanced food to frontline workers, i.e. doctors, nurses and other healthcare workers, was considered essential, and cooked food was provided to them throughout the crisis in spite of numerous difficulties.

Challenges for the Food Industry:

- Primary production may not be severely affected because of its geographic dispersal away from population densities, but transportation may be a problem.
- In this regard, the timely supply of both animal feed and ingredients for food products may be threatened, particularly if imported.
- The present reliance on specific markets, products and distribution channels are not robust enough to respond to anticipated disruptions.
- In addition to the tourism and hospitality sectors, commercial catering, including restaurants and other food service establishments, will be severely disrupted with serious human and economic costs.
- Food businesses must keep their staff healthy if they are to function and this includes maximizing social distancing at work. Consumer behavior will distort the food supply chain by hoarding and panic buying that are, in many cases, fueled by false information.
- E-commerce in food is undergoing tremendous growth as consumers respond to lockdowns, social distancing and fear of crowds, but needs to be regulated by those engaged in e-commerce for food safety.
- Emergency measures imposed in various jurisdictions may not be consistent and may even be contradictory, resulting in blocked trade.

Implications for Food Safety:

- This crisis shows again the real importance of food safety – good hygiene practices must be practiced by everyone, not just those in the food industry, but also by the consumer.
- Food handlers, from industry to consumer, should be reminded that they should follow the WHO Five Keys to Safer Food (https://www.who.int/foodsafety/areas_work/food-hygiene/en/), particularly handwashing.
- The disruption of the food supply chain poses new and perhaps unexpected food safety risks, particularly for perishable foods.
- Information about food safety needs to be communicated in an easily understandable, scientific and thoughtful manner to all stakeholders in the food chain, from producers to consumers, particularly in uncertain and chaotic times.

Response of the Food Industry:

- The food industry needs to urgently respond to various disruptions to ensure that an adequate safe, sufficient and affordable food supply is maintained for the global community. This is especially critical for large urban populations in developing countries.
- Food businesses need to be given the tools and training to be able to support diverse food supply and distribution chains.
- The food industry needs to respond to rapid changes in the products that consumers need and want, which may require modifications in raw materials and/or processing to ensure product availability.
- Staffing in the food industry is essential if the food supply is to be maintained. Staying in operation will require staff to stay healthy.
- Social distancing in the workplace must be accommodated, especially on the factory floor. In some production lines, social distancing is not possible and the spread of the virus can decimate the workforce. Segregated workers and designated work zones can effectively address this issue.
- Employees who contract the virus need to be enabled and empowered to report and stay home. As a result, there may be labour shortages and solutions must be put in place, possibly through e-technology, regarding recruitment and training of new staff.
- Workers from commercial catering, tourism and hospitality industries with food experience can be redeployed into other parts of the food industry.
- The food industry needs to allay consumers' anxiety through clear, scientific, user-friendly messaging that do not contain false claims.
- A priority must be placed on maintaining current food safety measures and preparedness for food recalls.

Suggestions for Post-Pandemic Consideration:

- The post-pandemic phase may result in major reviews of food systems, with special emphasis on resilience.
- This also affords opportunities for changes in agri-food systems that may make better use of locally produced foods.
- Development of safe and effective foods to promote immune function should be a priority for the food industry and governments. This may include foods for medical use by the elderly population, as well as other vulnerable groups.
- A paradigm frameshift regarding safe food practices should be promoted and good food safety habits that were developed during the pandemic reinforced.
- The food science and technology community should contribute to the recovery of the food sector along with other sectors and disciplines.
- Food scientists and technologists should have a stronger role in government policy and contingency planning to ensure the resilience of the food supply chain in responding to future pandemics, including other civil emergencies.

About IUFoST: The International Union of Food Science and Technology (IUFoST) is the global scientific organization representing food scientists and technologists and engineers. It is a voluntary, non-profit association of national food science organizations linking the world's food scientists and technologists and national scientific bodies. IUFoST was elected into scientific membership the International Science Council (ISC) by its multi-disciplinary peers as the sole representative of the discipline of Food Science and Technology. IUFoST also represents food science and technology to other international organizations. Its aim is to stimulate the ongoing exchange of knowledge and to develop strategies in those scientific disciplines and technologies relating to the expansion, improvement, distribution and conservation of the world's food supply.

About CIFST: CIFST is China's National Representative Body to IUFoST. The Chinese Institute of Food Science and Technology is a national scientific society with members working in food science, food technology and related professions in industry, academia, and government. CIFST is committed to capability building by recruiting the first-class professionals, strengthening capability by helping industry and academia, and establishing a platform for domestic and international exchange for food professionals all over the country to promote the development of food science and technology in China.

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Appendices included:

Appendix 1: Roundtable Programme - pages 5-6

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Appendix 1



Programme and Speakers



IUFOST/CIFST Extraordinary Scientific Roundtable Discussion on COVID-19 and Food Safety and its Implications, Challenges and Solutions for the Food Industry

Held on 21 March 2020 in Webinar Format

Roundtable Chair: Dr. Fereidoon Shahidi, IUFOST Scientific Council Chair, University Research Professor in the Department of Biochemistry at Memorial University of Newfoundland, Canada

Co-Chairs: Dr. Junshi Chen, Chief Adviser, China National Center for Food Safety Risk Assessment
Dr. Pingfan Rao, IUFOST Past President, Professor and founding Director of CAS.SIBS-Zhejiang Gongshang University Joint Center for Food and Nutrition Research in Hangzhou, China.

General Introduction and Welcome

Dr. Fereidoon Shahidi

Background to this Extraordinary Roundtable

Dr. Pingfan Rao

Scientific cognition of COVID-19 zoonotic disease

Dr. Peter Ben Embarek, Unit Head, Monitoring of Nutrition and Food Safety Events, International Food Safety Authorities Network (INFOSAN), World Health Organization

COVID-19 and Food safety and its challenges to the food industry

Dr. Chen Junshi, Member, Chinese Academy of Engineering; Chief Advisor of China National Center for Food Safety Risk Assessment

The future of the food industry in the post-epidemic era

Dr. Luo Yunbo, Honorary Vice President of CIFST; Director of Research Centre for Special Food, China Agricultural University

How food industries are preparing for and coping with COVID-19 in Europe

Dr. Patrick Wall, First Chair of the European Food Safety Authority; Professor of Public Health at University College, Dublin; Member of the Ireland COVID-19 National Emergency Response Team

Work experience from the frontline of epidemic prevention in Wuhan – focus on public nutrition and health

Dr. Ding Gangqiang, Vice President of CIFST; Director of Nutrition and Health Department, China CDC

Requirements of the epidemic situation to the construction of online food safety standards

Dr. Liz Duffy, Vice-President, Walmart

Panel Discussion Co-Chairs: Dr. Junshi Chen and Dr. Pingfan Rao

- **What are the challenges brought by COVID-19 to the global food industry?**
 - **How can these challenges be faced?**
 - **How can the food industry develop in the post-epidemic era?**
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Appendix 2 - Speaker Quotes:

Peter Ben Embarek: “China managed to put the outbreak under control, and for the last few days has not reported a single new domestic case. All the new cases are imported cases. That is an amazing achievement, and also a message of hope for the rest of the world, showing that this outbreak can be brought under control even though it might at times seem overwhelming; systems can fight it back and put the virus under control. It is not mission impossible, it is feasible, and several countries have shown that it can be brought back under control with the right measures.”

Chen Junshi: “COVID-19 is not a food borne disease, but it is a disease of animal origin. Consistent with the WHO statement, in China we have also not seen any reports of transmission through food because with such large numbers of cases in China, if some patients were transmitting through food, we would be able to find it.

And further, the United States Centre for Disease Control and European Centre for Disease Control stated that there is also no evidence that food items imported from China in accordance with related regulations will pose a risk of spreading COVID-19 in their countries. In normal cases in all cooked food there will be no viable virus. But for cautionary purposes it is recommended to not consume raw or undercooked animal products.”

Luo Yunbo: “The food industry seems to be one of the pillars of the GDP of many countries, and of course it cannot be spared.”

On the subject of the China food industry post-pandemic:

“First: Supervision of food safety will be stricter than before. The whole supply chain will be covered by the government. Second: Functional foods, which focus on immunity, will be more emphasized. Third: Increase in use of food for special medical purposes... In this are we have big gap with developed countries. There is a huge potential market. Lastly: This outbreak is a black swan incident; [it is] not only a challenge, but a huge opportunity.”

Patrick Wall – “Before COVID-19, we talked about having a resilient food supply chain but this COVID-19 has demonstrated that the best contingency plans have proved inadequate.”

Dr. Wall addressed seven areas of impact: Inputs; Distribution; Commercial Catering, Consumer Behaviour, Staff in the food industry; Survival of Businesses, and Recovery.

“With regard to staff in the food industry, he said: If the industry at all stages along the supply chain is to stay operational it requires the staff to stay healthy. In some processing facilities, social distancing is not possible and cases of COVID-19 have to be excluded from work and so have their close contacts so this

can decimate a workforce. So, some of the companies are practicing segregation of workers by zoning their production facilities and segregating workers both spatially and temporally. If a zone goes down there is only a small number of people have to be excluded. In other aspects of the industry, because the hospital industry has been closed down, that's left a lot of people that have some familiarity with working with the food available to be reabsorbed and re-deployed into the processing sector and retail sector."

Ding Gangqiang - "In Wuhan, we found that limited food options posed the risk of undernutrition. Since the closure of the community, the residents' diet structure and lifestyle in Wuhan city has changed greatly with very limited food options."

Dr. Ding noted that consumption of foods that were easy to purchase and store was less affected. Purchase of products not easy to store, transport, distribute or process decreased. Rising prices also affected the choice of foods.

"The residents may maintain the original level of energy intake or even increase slightly; however, intake of vitamins, minerals, higher-quality plant-based protein, n-3 long-chain polyunsaturated fatty acids among the residents was insufficient."

"Strict measures of community closure have effectively curbed the spread of the epidemic and made epidemic prevention and control achieved substantial phased results. But at the same time, community closure has greatly reduced the time for residents to go out, which has a great impact on the elderly and children. "

"The obvious decrease in the amount of physical activity makes the energy demand of the elderly and students greatly decrease, which has a negative impact on the maintenance of the physical function of the elderly and the normal growth and development of the students."

"It may be as a result of the closure of the Wuhan community, overweight and obesity may be higher than before."

"We think that because of this pandemic we are increasing the risk of NCDs...These NCD-related risk factors have not been timely and effectively monitored, not to mention timely and effectively controlled. It will bring potential risks to the health of the elderly."

Liz Duffy - "One of the most critical things in these situations is for stakeholders to come together in collaboration. We all have a shared goal to protect consumers around the world, mitigate the risk of food security and food safety..."

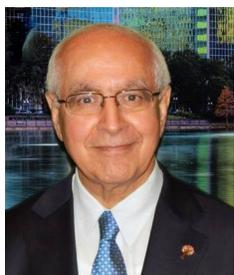
"In the e-commerce space, in particular, consumers solely shop online or primarily shop online, or spend a significant amount of time online. They are getting inundated with information around the outbreak and unfortunately a lot of that information is not founded on science. They are looking at social media sites and other information sources to identify information around the outbreak, and so I think it is important that, as we can interact with consumers, to make sure that they are getting the most accurate information that's founded in science..." "We have so much work to do in educating our consumers and providing them with information that they need to make good decisions."



COVID-19 and Food Safety and its Implications, Challenges and Solutions for the Food Industry

Biographies and Photos of Speakers

Speakers in order of speaking



Dr. Fereidoon Shahidi, Chair of the IUFOST Scientific Council and Roundtable Chair

Fereidoon Shahidi, Ph.D., FACS, FAGFD-ACS, FAOCS, FCIC, FCIFST, FIAFoST, FIFT, FISNFF, FRSC, is a University Research Professor in the Department of Biochemistry at Memorial University of Newfoundland, Canada. He has authored over 850 research papers and book chapters, 76 books, and 10 patents. His research interests are primarily in the areas of nutraceuticals and functional foods with particular attention to polyphenols, natural antioxidants and oxidation control. His work has been cited widely (h-index 129). He has received numerous awards from different societies, including the American Chemical Society (ACS), American Oil Chemists' Society (AOCS), Institute of Food Technologists (IFT), Canadian Institute of Food Science and Technology (CIFST), Chemical Institute of Canada (CIC), Royal Society of Chemistry (RSC), International Society for Nutraceuticals and Functional Foods (ISNFF). He has served on and chaired many committees, evaluating different programs both nationally and internationally, such as the nutraceuticals and functional food research at the USDA. He is a fellow of the International Academy of Food Science and Technology and currently the elected chair of the Scientific Council of the International Union of Food Science and Technology (IUFOST). He serves as the editor-in-chief (EiC) of the *Journal of Food Bioactives* and the journal of *Food Production, Processing and Nutrition*. Shahidi is the principal founder of the ISNFF, a Disciplinary Interest Group of IUFOST and Founding EiC of the *Journal of Functional Foods* for which he served in that capacity for 10 years. He served as an editorial board member and an Editor of Food Chemistry for a quarter of a century. He was also the principal founder of the Nutraceutical and Functional Food Division of IFT. He has trained over 120 graduate students, highly qualified personnel, and PDFs, now his colleagues in a dozen countries.



Dr. Pingfan Rao, IUFOST Past President and Roundtable Co-Chair

Pingfan Rao, Ph.D., received BEng in food technology from Fuzhou University of China in 1982, Msc in food science from Hiroshima University of Japan in 1986, and PhD in biochemistry from Osaka University of Japan in 1989. He has been teaching for over twenty years at Fuzhou University, and is currently Professor and founding Director of CAS.SIBS-Zhejiang Gongshang University Joint Center for Food and Nutrition Research in Hangzhou, China. He is actively involved in the food and biotechnology industries, as the founder and advisor of food and biotech companies, the President (2012-14) of the International

Union of Food Science and Technology, a fellow of International Academy of Food Science and Technology and an advisor to municipal governments. He has also been the Vice President of the Chinese Institute of Food Science and Technology since 2001. His research focuses primarily on identifying and characterizing bioactive proteins and expression and scale production of recombinant enzymes, protein derivatives as the active ingredients of tradition Chinese medicine and food, new methodology for cell separation and acupuncture meridians as the superoxide channel. In addition to his work in China, he is also a Distinguished Visiting Professor of the University of Ulster, UK, a supervisor of joint PhD program with the University of Edinburgh, UK and Wageningen University, Holland.



Dr. Peter K. Ben Embarek, Unit Head, Monitoring of Nutrition and Food Safety Events, International Food Safety Authorities Network (INFOSAN), World Health Organization

Peter K. Ben Embarek is currently working with the World Health Organization (WHO) at its Headquarters in managing the WHO International Food Safety Authorities Network (INFOSAN). He is also head of the unit covering monitoring of nutrition and food safety events in the department of nutrition and food safety and member of the WHO COVID-19 response team. Previously from WHO's China Office, he was providing policy and technical advice to the government of China on food safety and nutrition issues. He joined WHO at its HQ in Geneva, Switzerland in 2001 where he worked in lending support to Member States on how to develop and strengthen integrated and multisectoral national food safety strategies and policies. He was also responsible for the microbiological aspects of food safety matters in the work of the Organization including the development of microbiological risk assessment work at the international level. He is covering food related issues as part of the WHO assessment and response efforts to new emerging public health issues such as COVID-19, MERS-CoV, Avian Influenza and SARS. From 2014 to 2017, he was managing the WHO MERS-CoV virus Task Force and coordinated the investigations into the animal source of the disease. Dr. Ben Embarek served with the Food and Agriculture Organization of the United Nations (FAO) beginning in 1995 where he coordinated research and development activities and provided technical advice on safety and quality aspects of fishery products at the regional office for Asia and the Pacific in Bangkok, Thailand. In 1997, he joined the Fisheries Department of FAO HQ in Rome, Italy where he covered food safety aspects of the work of the Department. Dr. Ben Embarek received his MSc. Degree in Food Science and Technology and a Ph.D. in Food Safety from the Royal Agricultural and Veterinary University of Copenhagen, Denmark. He is a Fellow of the International Academy of Food Science and Technology (IAFoST) under the International Union of Food Science and Technology (IUFoST) and the 2017 recipient of the Scientific Spirit Award of the Chinese Institute of Food Science and Technology (CIFST).



**Dr. Junshi Chen
Member, Chinese Academy of Engineering; Chief Advisor of China National Centre for Food Safety Risk Assessment, Roundtable Co-Chair**

Dr. Junshi Chen was graduated from the Department of Public Health, Beijing Medical College in 1956 and engaged in nutrition and food safety research for more than 50 years at the Institute of Nutrition and Food Safety, Chinese Center for Disease Control and Prevention (the former Chinese Academy of Preventive Medicine), Beijing. Since 2011, he took the position of Senior Research Professor and Chief Scientific Advisor at the China National Center for Food Safety Risk Assessment. His major research interests include food safety risk assessment & risk communication; epidemiological studies on diet, nutrition and chronic diseases.



Prof. Luo Yunbo

Honorary Vice President of Chinese Institute of Food Science and Technology (CIFST); Director of Research Center for Special Food, China Agricultural University

Prof. Luo Yunbo graduated with a B.Sc. degree in agriculture from Southwest Agriculture University China in 1982, and obtained a Ph.D. in biological sciences at University of Bath, UK in 1987. Prof. Luo is now serving as the director of Research Center for Special Food, China Agricultural University after completed his deanship of College of Food Science and Nutritional Engineering in Agricultural University for almost 20 years. He has been dedicated to the research in promoting the food safety

and food nutrition. His scope of his research is currently focusing on the investigation of the mechanism of ripening and senescence of postharvest fruits and vegetables, the R&D of plant bio reactor in food industry, GMO testing and food safety assessment of GMOs.

Prof. Luo is widely acknowledged for his achievements in these fields with his intensive research paper publications. Up to now, nearly 280 reviews and research articles have been published, among which more than 100 are cited by SCI.

Prof. Luo is deputy director of State Agricultural GM Crop Bio-safety Committee, Member of the National Expert Committee for the Food Safety, member of The State Council discipline appraisal group, and vice president of Chinese Institute of Food Science and Technology. In April 2007, he gave a lecture on food safety issues in the 41th collective learning of Communism Party Central Political Bureau. What's more, he is also Chairman of the Executive Council of Society of Postharvest Horticultural Products in Chinese Society for Horticultural Science, Editor-in-Chief of Journal of Chinese Institute of Food Science and Technology, Director of Steering Committee for Compilation of Food Science Textbook for Higher Education in China. He was elected as the fellow of International Academy of Food Science and Technology.



Dr. Patrick Wall

**First Chairperson of the European Food Safety Authority (EFSA)
Professor of Public Health in University College Dublin, Member of Ireland
Emergency Response Team for COVID-19**

Dr. Patrick Wall is Professor of Public Health in University College Dublin and a member of the UCD Institute for Food and Health.

His research areas include food safety, nutrition and managing lifestyle related disease through behavioral change. He was the Principal Investigator on Foodrisc, a pan EU project looking at optimum strategies for risk and benefit communication,

using both conventional and new media.

He is one of the directors of University College Dublin's Masters in Public Health and of the UCD Masters in Food Safety and Risk Assessment. He is also one of the directors of the Joint Masters in Public Health being undertaken in UCD's Branch Campus in Malaysia, where is also involved in their "One Health" Program.

He runs the UCD postgraduate module on Risk Perception and Behavioral Change and currently he has one PhD student and one post doc working on projects in the areas of consumer engagement and behavior change.

As a medical doctor he is a specialist in Communicable Diseases and he was the head of the Foodborne Diseases Division of the UK CDC, 1995-1997, now called Public Health England.

He was the first Chief Executive of the Food Safety Authority of Ireland (FSAI), 1998-2002, and contributed to the setting up of this science based consumer protection agency created in response to the BSE crisis. He was a founder member of management board, and the second Chairperson, of the European Food Safety Authority (EFSA), based in Parma in Italy. The FSAI is involved in enforcement and risk management, in addition to risk assessment and risk communication and the EFSA in risk assessment and risk communication. Both organizations strive to be open and transparent with the public.

He was one of seven non-Chinese nationals on the committee advising on food safety arrangements for the 2008 Beijing Olympics and is currently one of six non-Chinese nationals on the International Scientific Advisory Committee of the newly founded China National Center for Food Safety Risk Assessment, which is the Chinese equivalent of the European Food Safety Authority.

He is a leader of a component of the EU Sino Safe Project working with the Communication Division of the CFSA on Consumer Engagement with regard to food safety issues.



Dr. Ding Gangqiang,
Vice President of Chinese Institute of Food Science and Technology (CIFST)
President of Food Nutrition and Health Society, CIFST
Director of National Institute for Nutrition and Health, China CDC

Ding Gangqiang, chief physician, Doctor of Medicine and Doctoral Supervisor. He is the director of National Institute for Nutrition and Health, China CDC, Vice President of Chinese Institute of Food Science and Technology, Vice chairman of Chinese Nutrition Society, member of the First National Food Safety Risk Assessment Committee, Expert Committee on Disease control and prevention in Ministry of Health.



Liz Duffy, Vice President of Omnichannel Compliance, Walmart Global eCommerce

Liz Duffy is the Vice President of Omnichannel Compliance for Walmart Global eCommerce. Liz has worked for Walmart for 14 years with nine years dedicated in Walmart's Food Safety and Health organization. Prior to working for Walmart, Liz worked in Quality Assurance for Cargill Value Added Meats.

Liz has a Bachelor of Science from the University of Arkansas and a Master of Business Administration with an emphasis on Leadership and Ethics.