



**Food and Agriculture
Organization of the
United Nations**



**World Health
Organization**

Joint FAO/WHO Expert meeting on Microbiological Risk Assessment of *Listeria monocytogenes* in Ready-to-Eat (RTE) Food: Attribution, Characterization and Monitoring

20 October - 6 November 2020

Experts participating in the meeting

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Background information

In response to the request from Codex for scientific advice, FAO and WHO has undertaken the risk assessment on *Listeria monocytogenes* in several foods since 1999. Risk assessments, previously developed at the national level, were adapted or expanded to address concerns in RTE foods at an international level. To support this work, the 2004 FAO/WHO risk assessment on *Listeria monocytogenes* provided scientific insight into the risk characterization of *Listeria monocytogenes* contamination in food and the seriousness of listeriosis for susceptible populations. The technical report was limited to a cross-section of RTE foods; pasteurized milk, ice cream, cold-smoked fish and fermented meats, and the likelihood of these products as vehicles for human foodborne listeriosis.

Since then, outbreaks of listeriosis continue to occur across the globe, associated with previously reported and many previously unreported food vehicles, including fresh and minimally processed fruits and vegetables, sprouts, RTE meat products and frozen dairy products. Of particular importance, an outbreak in South Africa, in 2017, linked to RTE meat products caused 1,064 illnesses and 218 deaths (as of August 2018). This is the largest and deadliest outbreak of listeriosis recorded to date. New tools are also available to characterize isolates of *Listeria monocytogenes*. With these new developments in diagnostics and changes in the epidemiology of listeriosis outbreaks, the FAO/WHO JEMRA is undertaking new work on *Listeria monocytogenes* in RTE foods. New research findings and data representing the different food commodities and geographical regions will provide opportunities to validate the current risk assessment models for *Listeria monocytogenes*, assess their application to other food commodities and develop new management approaches to control *Listeria monocytogenes*.

List of experts

The following list of experts is proposed for this meeting. Please find below their bio-sketches. If you have any comments, please contact us at jemra@fao.org and jemra@who.int no later than **15 October 2020**.

Dr Ana Allende

Dr Ana Allende from CEBAS-CSIC (Spanish National Research Council) in Spain is a Senior Researcher with focus on quality and safety of fresh produce. She obtained her Degree at the Faculty of Veterinary Science at the University of León (Spain) and her PhD in Food Science and Technology at the University of Cartagena, (Spain). She holds several positions in (inter)-national institutions including vice-chair of the BIOHAZ panel at the European Food Safety Authority (EFSA), vice-director of the CEBAS-CSIC, Member of the Joint FAO/WHO Expert Meetings on Microbiological Risk Assessment (JEMRA) Roster of Experts, and member of the COST ACTION HuPlant. She has published more than 110 research articles in peer-reviewed international journals focused on the safety of fresh produce with more than 5000 cites. Her current H index is 40. She has built up more than twenty years of scientific research but also management experience by executing, initiating and guiding research projects in the area of microbial safety of fresh produce. Promotor of 7 PhD students (past and present).

Dr Sukhadeo Barbuddhe

Dr Sukhadeo B Barbuddhe has been working on *Listeria monocytogenes* for the last two decades, contributing significantly to the epidemiology and genomic landscape of *L. monocytogenes* in the Indian subcontinent and public health microbiology of various zoonotic and foodborne infections. His major achievements include discovery of a novel species of *Listeria*, *L. goaensis*, indigenous to the subcontinent and a predominant, stable and widespread epidemic clone of *L. monocytogenes* serotype 4b in the Indian subcontinent. He developed diagnostic assays, DNA and synthetic peptide based (latex agglutination test and ELISA), for listeriosis, protocols for molecular subtyping and a national repository of *Listeria* strains isolated from 20 states of India and Indian *Listeria* Culture Database. He established “Centre of Excellence” on Molecular epidemiology of *L. monocytogenes*. He has contributed to the Whole genome sequencing (WGS) of *Listeria* spp isolated from India and reassessed the pan-genome of *L. monocytogenes* for its dynamic integration hotspots and mobile genetic elements. He had been a Member of the International Advisory /Scientific Committees for XVI, XVII, XVIII, XIX and XX International Symposia on Problems of Listeriosis (ISOPOL) held in the USA (2007), Portugal (2010), India (2013), France (2016) and Canada (2019). He also organized ISOPOL XVIII in Goa, India, September 19-22, 2013 as Convener and Secretary, Scientific Committee.

Dr Brecht Devleesschauwer

Dr Brecht Devleesschauwer is a senior epidemiologist at Sciensano and visiting professor in Risk Analysis at Ghent University. He conducts policy-driven public health research in the domain of composite measures of population health and health inequalities. As a member of the World Health Organization Foodborne Disease Burden Epidemiology Reference Group (WHO/FERG), he contributed to the estimation of the global burden of foodborne disease. Currently, he is coordinating the Belgian National Burden of Disease Study, and chairing the European Burden of Disease Network (COST Action CA18218). Brecht holds PhD degrees in Public Health and Veterinary Sciences, and MSc degrees in Biostatistics and Veterinary Medicine.

Dr Qingli Dong

Dr Qingli Dong is a professor and doctoral supervisor of the University of Shanghai for Science and Technology (USST), P. R. China, and he received his M.E. and PhD on food science and engineering in 2004 and 2007, respectively. Afterwards Dr Dong worked as a post-doctoral fellow in USST during 2007-2009. Dr Dong worked as a visiting scholar at the Institute of Food Research (IFR), UK, supported by the Chinese Scholarship Council (CSC) during 2013-2014. His research is focused on predictive food microbiology and its application on the quantitative microbiological risk assessment (QMRA), mainly supported by the Natural Science Foundation of China (NSFC), China National Center For Food Safety Risk Assessment (CFSA), and Shanghai Municipal Natural Science Foundation. Dr Dong has published over 180 academic papers among the fields mentioned above in some international or Chinese journals of food science, and reviewed over 900 manuscripts for some journals as a peer reviewer. Dr Dong has sponsored and (co)hosted a Workshop on Predictive Microbiology and Risk Assessment in Foods (MicroRisk) annually in China since 2014. Dr Dong has won second level on the Technology Advance Award of Shanghai Municipal in 2016.

Dr Catherine Donnelly

Dr Catherine W. Donnelly is a Professor of Nutrition and Food Science at the University of Vermont. Dr Donnelly has been recognized by her colleagues for her many contributions to improving *Listeria* detection. Dr Donnelly has published numerous articles and delivered hundreds of presentations on the topic of *Listeria*. She has been a prolific author and a chapter contributor to numerous authoritative texts on *Listeria* detection including Standard Methods for Examination of Dairy Products, Compendium of Methods for Microbiological Examination of Foods, and *Listeria*, Listeriosis and Food Safety. Her research interests center on development of detection methods for *Listeria* and understanding the impact of sublethal injury on *Listeria* recovery and detection. Dr Donnelly and her research colleagues pioneered the development of methods to detect *Listeria* in foods, including development of UVM media. Dr Donnelly received the prestigious Maurice Weber Laboratorian Award from the International Association for Food Protection in 2006 in recognition of her work to advance practical laboratory approaches to advance food safety.

Current scholarly interests include investigation of the microbiological safety of raw milk cheeses aged for 60 days.

Dr Jeffrey Farber

Dr Jeff Farber is currently employed as a Full Professor in the Department of Food Science at the University of Guelph, in Guelph, Ontario, where he is head of the Master's Program in Food Safety and Quality Assurance (FSQA) and is also the Director of the Canadian Research Institute for Food Safety.

Dr Farber previously worked at Health Canada, most recently as Director of the Bureau of Microbial Hazards, in the Food Directorate of Health Canada, where he led a group of about 60 people working in the areas of food safety research, risk assessment, policy, risk management and risk communication. Dr Farber has over 150 publications, plus numerous Book Chapters and has edited 4 books.

Dr Farber has been instrumental in advancing the development of policy approaches on emerging microbial food safety issues in Canada and at a global level. He was a key driver in the

development of the current Health Canada policy on *Listeria monocytogenes* and has done research, risk assessments and policy work on this organism since 1985. Dr Farber also has extensive experience working at the international level with organizations such as Codex Alimentarius, WHO and FAO.

Dr Lisbeth Truelstrup Hansen

Dr Lisbeth Truelstrup Hansen, Ph.D., is a professor and research group leader in Food Microbiology and Hygiene at the Technical University of Denmark (DTU). After completing her Ph.D. in Food Microbiology at the Royal Veterinary and Agricultural University (Denmark) in 1996, she continued to do her Postdoc at the Technical University of Nova Scotia (Canada) working on a natural antimicrobial peptide. She later became a Faculty member at Dalhousie University (Canada), where she worked as a full professor in Food Microbiology and Environmental Hygiene until 2015 prior to taking up her current Professorship at DTU.

She has done extensive studies of the growth and fitness of *Listeria monocytogenes* in different environmental and food systems, including studies of genetic factors involved in biofilm formation and desiccation tolerance. Other research work involves studies of transport, dissemination and mitigation of antimicrobial resistance and human pathogens in natural and manmade water systems, e.g., work on decentralized water and sanitary systems in remote (arctic) communities. Current research projects deal with predictive modelling of safe shelf-lives of refrigerate ready-to-eat food products, processing and microbial ecology in marine foods, and application of models and omics techniques to predict environmental fitness of bacterial pathogens such as *L. monocytogenes*.

Dr Alejandra Latorre

Dr Alejandra A. Latorre is a Doctor of Veterinary Medicine and Master of Science from the University of Concepción, Chile. Dr Latorre got her PhD at Cornell University, United States, where she specialized in Animal Science, Food Science, and Epidemiology.

During her PhD at Cornell, she studied the molecular epidemiology of *Listeria monocytogenes* on dairy farms, and the role of biofilms as source for bulk tank milk contamination. In addition, Dr. Latorre contributed to the understanding of the persistence of *Listeria* organisms within dairy operations, and worked on qualitative risk assessment of Listeriosis due to consumption of raw milk on farms and from retail sources.

Currently, Dr Latorre is an Associate Professor and the Manager of the Veterinary Public Health field at the College of Veterinary Sciences in the University of Concepción, Chile, and she also works as a consultant for both dairy operations and the dairy industry.

Dr Latorre is actively conducting research on milk microbiology, sources of milk contamination and on-farm biofilms, factors affecting the quality of milk for human consumption, as well as research on the epidemiology and dynamics of milk-borne pathogens of relevance for public health.

Dr Alexandre Leclercq

Dr Alexandre Leclercq is deputy director of the French Reference Centre and WHO Collaborating Centre *Listeria* at Institut Pasteur, Paris, since 2007. He is a chemical and agricultural engineer (ISAB, France; Catholic University of Louvain (UCL), Belgium). He spent three years (1997-2000) at UCL as assistant professor in microbiology and chemistry where he studied molecular epidemiology of Shiga toxin-producing *Escherichia coli*. Then, he became deputy director of the education department and head of the Laboratory for Food Safety and Microbiology at Institut Pasteur Lille, France (2000-2003). In 2003, he joined the Institut Pasteur in Paris and at first studied molecular epidemiology of enteropathogenic *Yersinia* and plague and, in 2007, national and international microbiological surveillance, epidemiology and genomics of *Listeria*. He was an on-call biologist at the Laboratory for Urgent responses to biological threats at Institut Pasteur, Paris (2009- 2017). After thirteen years of standardization at CEN and ISO level, he was nominated in 2005 convenor of CEN TC275 “Food Analysis” Working Group 6 “Microbiology of the food chain” and, in 2019, chairman of CEN TC 463 “Microbiology of the food chain”. He scientifically managed the CEN mandate M381 of the European Commission on validation of fifteen reference CEN ISO methods in microbiology of the food chain (2011-2017; 150 laboratories ; 35 Countries ; 15 interlaboratory studies). He is technical assessor in food/water/environmental/clinical microbiology, proficiency testing and molecular biology for four accreditation bodies. Co-author of 83 peer-reviewed publications (h-index: 27), member of 2 editorial boards of peer-reviewed journals, 13 book chapters, legal expert in food quality and safety (Tribunal de Grande Instance de Paris, France), expert for *Listeria* (ANSES, ECDC) and WHO food safety expert (*Listeriosis* outbreak in South Africa, May-June 2018).

Dr Kudakwashe Magwedere

Dr Kudakwashe Magwedere is a Regulatory Scientist/Technical Specialist in the area of Food Safety and Veterinary Public Health. He received his degrees in Veterinary Science and MSc in Physiology from the University of Zimbabwe, a Post graduate Diploma in Business Entrepreneurship from the University of Pretoria and a Ph.D. degree from Stellenbosch University in Animal Sciences focusing on the safety and quality assurance of the animal protein value chain. From 2001 to 2003 he was a staff Development Fellow in the College of Health Sciences at the University of Zimbabwe and from 2003 to 2012 he advanced to be a professional Public Health Veterinarian at the Ministry of Agriculture, Water and Forestry in the Namibian government. He joined the South African National Department of Agriculture, Forestry and Fisheries in 2012 as a Public Health Veterinarian responsible for compliance auditing and policy development in the area of Veterinary Public Health and Food Safety. He participates in Foodborne disease outbreak surveillance and investigations in South Africa and served on several committees including the Specialist Technical Committee of the South African National Accreditation System, National Steering Committee Member for the United Nations Development Program- Global Environmental Facility (UNDP-GEF). He has published more than 17 scientific papers focusing on the safety and quality assurance in the animal protein value chain.

Dr Deon Mahoney

Dr Deon Mahoney has had a long career working in food science and technology, with a specific focus on tackling issues that impact on the microbiological safety of food.

Over his career his roles have included the development of food safety policy, undertaking microbiological risk assessments to support standard setting, risk communication, development and enforcement of food legislation, supporting the industry to meet food safety obligations, and delivery of training and education.

In recent years this has involved the provision of high-level technical support and the drafting of guidance materials designed to ensure the safety and suitability of foods, including dairy products and fresh produce.

He has previously worked for the World Health Organization and the Food and Agriculture Organization, as well as with Food Standards Australia New Zealand, and a dairy regulatory agency in Australia. In these roles he has developed and published a wide range of technical guidance material; provided forward-looking scientific advice addressing factors that impact the safety of food products; and been actively involved in *Listeria* incident monitoring and risk mitigation.

He has post graduate qualifications from the University of Sydney and was made a Fellow of the Australian Institute of Food Science and Technology in 2019.

Dr Tom Ross

Dr Tom Ross is a food microbiologist, specialising in mathematical modelling and microbial ecology of foods and works at the Food Safety Centre at the University of Tasmania. In addition to microbial ecology and physiology studies, the Centre has developed mathematical models and risk-based decision-support systems that are used in the food industry and by government to improve food safety and food preservation. He is active in undergraduate and postgraduate teaching and training, and has supervised or co-supervised 21 PhD graduands. Much of Tom's work has involved modelling of the eco-physiology of *L. monocytogenes* in 'at-risk' foods and the risk they pose to susceptible consumers.

He has written over 150 scientific papers and book chapters on the topic of modelling of microbial behaviour in foods, with particular emphasis on application of predictive microbiology and quantitative risk assessment in food safety management. He was a member of the expert consultation on *L. monocytogenes* risk in 'ready-to-eat' foods organized by FAO and reported in 2004 which led to significant changes in *L. monocytogenes* risk management internationally. He has been a member of numerous expert consultations on food safety risk assessment and risk management, convened by the Australian government and industry organisations and internationally.

Dr Elliot Ryser

Dr Elliot Ryser received his B.S. in Bacteriology, and his M.S. and Ph.D. degrees in Food Science from University of Wisconsin under Dr Elmer Marth. After research positions at INRA (Jouy-en-Josas, France), Silliker Laboratories, USA and University of Vermont under Dr Catherine Donnelly, he joined the Department of Food Science and Human Nutrition at Michigan State University in 1998 where he is now a Professor. An internationally recognized authority on *Listeria* and co-author/co-editor of the well-known book *Listeria, Listeriosis and Food Safety*, Dr Ryser's research has focused on quantifying the extent of bacterial cross-contamination during mechanical slicing of deli meats and during simulated commercial production of fresh-cut produce using a unique pilot plant-scale processing line with his findings now helping to refine various risk assessments. Dr Ryser has advised

61 graduate students (9 PhD and 17 MS as major professor), authored/co-authored 36 book chapters, 114 research articles and 246 abstracts. He is a Co-Scientific Editor for the Journal of Food Protection, a past recipient of the Elmer Marth Educator, Maurice Weber Laboratorian, GMA Food Safety and Harry Haverland Awards from the International Association for Food Protection (IAFP) and a Fellow of both IAFP and the Institute of Food Technologists.

Dr Marcel Zwietering

Dr Marcel Zwietering obtained his MSc Biotechnology in 1987 and his PhD in 1993 at Wageningen University. During his positions as assistant and associate professor at Wageningen, he spent a sabbatical half year in the Unilever research lab in Colworth House, UK. In 1998 he moved to the research lab of Danone in France. Since January 2003 he is a professor in Food Microbiology at Wageningen University. He has published 208 papers and has a h-factor of 44 (Scopus October 2019) and is editor of the International Journal of Food Microbiology and member of the editorial board of the Journal of Food Protection. In 2005 he was elected as member of the International Commission on Microbiological Specifications for Foods (ICMSF) and in 2006 he was appointed in the Dutch Health Council. At IAFP2019 he was awarded the Elmer Marth Educator Award and the International Leadership Award.

Personal page: <http://www.wageningenur.nl/en/Persons/Marcel-Zwietering.htm>

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