

36th EFFoST International Conference

*Shaping the Production of Sustainable,
Healthy Foods for the Future*



7-9 November 2022
Dublin, Ireland



Abstract book



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Transcriptomic response of *Listeria monocytogenes* planktonic and sessile cells to plasma-activated water

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Aim:

Due to the limitations of traditional sanitisers in the food industry, intense research efforts have been focused on the development of more environmentally friendly and effective strategies. Plasma-activated water (PAW) has emerged as a promising alternative for the decontamination of food processing environments. Even though its efficacy for the inactivation of numerous microorganisms, especially in planktonic state, has been widely reported, the precise inactivation mechanism is still unclear.

Method:

In this study, the transcriptomic response of *L. monocytogenes* PAW-treated cells, both on planktonic state and within biofilms, was studied through RNA-seq.

Results:

A total of 399 differentially expressed genes (DEGs) were identified on *L. monocytogenes* planktonic treated cells, 178 of them upregulated and 221 downregulated. However, only 8 DEGs, all of them upregulated, were identified on *L. monocytogenes* biofilm cells due to a lack of statistical significance associated with the high variability observed between biofilm replicas. Some of the most upregulated genes, including the only common DEG in planktonic and biofilm cells, are included in the cobalamin-dependent gene cluster (CDGC), involved on ethanolamine and 1,2-propanediol metabolism. For the planktonic cells, a general remodelling of carbon metabolism, with differential expression of many phosphotransferase systems (PTSs), was observed as well as changes in the expression (either up- and down-regulation) of genes related to virulence and to the general stress response, controlled by the alternative sigma factor SigB. Also, an induction of one of the principal systems involved in *L. monocytogenes* acid stress response, the glutamate decarboxylase (GAD) system, was observed, which was associated to the low pH (2.33±0.01) of the PAW used for the treatment. However, under the tested conditions, no relevant changes in the expression of components of the oxidative stress response were detected.

Conclusion:

Overall, these results contribute to improving the understanding of PAW's mode of action in the inactivation of microorganisms.



Certificate of Attendance

We hereby confirm that

Mrs Paula Fernández Gómez

attended

EFFoST 2022 International Conference
and the EFFoST / IFT-NPD Workshop
7-9 November 2022, Dublin, Ireland

A handwritten signature in black ink, reading "Dolores O'Riordan".

Prof. Dolores O'Riordan
For and on behalf of EFFoST

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**NTP
2022**





Certificate of Contribution

We hereby confirm that

Mrs Paula Fernández Gómez

Presented at

The 36th EFFoST International Conference
and the EFFoST / IFT-NPD Workshop

7-9 November 2022, Dublin, Ireland

Prof. Dolores O'Riordan

For and on behalf of EFFoST

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**NTP
2022**



Room	President Suite Level 2	1872 Room Level 3	Lansdowne Room Level 2	Havelock Suite Level 4	Vavasour Suite Level 2	Special-session room 442 Level 4	Special-session room 441 Level 4
13:45 - 15:50	<p>Session 13: Bioinformatics and its role in food safety, hygienic design & contamination control Chairs: Hermien van Bokhorst-van de Veen and Aoife Gowan</p>	<p>Session 14: Advances and challenges in alternative proteins Chairs: Mark Fenlon and Jo Gould</p>	<p>Session 15: Advances in food packaging to safeguard food and the environment Chairs: Sharma Shubam and Song Miao</p>	<p>Session 16: Consumer trends and responses to emerging and future foods Chairs: Mary McCarthy and Roisin Burke or Lubna Ahmed</p>	<p>NTP Session 7: How will nonthermal technologies play a part in future local and global food safety and security Chairs: Maria Elena Sosa-Morales and Gustavo Barbosa Canovas</p>	<p>Special session: The INGREEN Journey from agrifood sidestream to sustainable biobased products Chair: Narinder Bains</p>	<p>Special Session: Global Harmonization Initiative - available, sustainable, healthy food for the future through networking sound science Chair: Nicola Stanley and Hilde Wjngaard</p>
13:45 - 14:10	<p>(KN13.1) Precision food safety - using DNA sequences to inform risk assessment Seamus Fanning, <i>University College Dublin, Ireland</i></p>	<p>(KN14.1) Microalgae based production of single-cell protein Maria Barbosa, <i>Wageningen University, the Netherlands</i></p>	<p>(KN15.1) Sustainable food systems: Role of food packaging Begonya Marcos Muntal, <i>IRTA, Spain</i></p>	<p>(KN16.1) Understanding the individual in the food system, a science of consumers or citizens? Monique Raats, <i>University of Surrey, United Kingdom</i></p>	<p>(N7.1) The past and future history of nonthermal processing of foods: fruit and vegetable based food systems Marc Hendrickx, <i>KU Leuven, Belgium</i></p>	<p>13:45 - 13:50 Introduction to the Global Harmonization Initiative Nicola Stanley, <i>Global Harmonization Initiative, Austria</i></p> <p>13:50 - 14:10 (S04.1) The complexity of regulations for human milk John Points, <i>John Points Consulting Ltd., United Kingdom</i></p>	<p>13:45 - 13:50 Introduction to the Global Harmonization Initiative Nicola Stanley, <i>Global Harmonization Initiative, Austria</i></p>
14:10 - 14:30	<p>(O13.2) Mechanistic modeling of the dynamics of phage attack in milk acidification for the cheese-making process Michèle Bou Habib, <i>Inrae, France</i></p>	<p>(O14.2) Protein concentrates from edible insect Tenebrio molitor – development of extraction methods and techno-functional characterization Luís M. Cunha, <i>University of Porto, Portugal</i></p>	<p>(O15.2) Carbon nanotube-based sensors for intelligent packaging Niloufar Sharif <i>École Polytechnique Fédérale de Lausanne, Switzerland</i></p>	<p>(O16.2) Plant-based protein: the road to sustainability? Says who? Seamus O'Reilly, <i>University College Cork, Ireland</i></p>	<p>(N7.2) Non-thermal Plasma for Fresh Produce: Scaling Efficacy from Bench to Prototype/ Industry for gaseous/ liquid applications Uta Schnabel, <i>Leibniz Institute for Plasma Science and Technology, Germany</i></p>	<p>(S04.2) Healthy nutrition based on food-omics data and meeting 3P (predictive, preventive and personalized) medicine expectations Nadiya Boyko, <i>Uzhhorod National University, Ukraine</i></p>	<p>(S04.2) Healthy nutrition based on food-omics data and meeting 3P (predictive, preventive and personalized) medicine expectations Nadiya Boyko, <i>Uzhhorod National University, Ukraine</i></p>
14:30 - 14:50	<p>(O13.3) Characterization of Cronobacter sakazakii isolates from powdered infant formula manufacturing plants by Whole Genome Sequencing Zeinabossadat Ebrahimzadeh Mousavi, <i>University College Dublin, Ireland</i></p>	<p>(O14.3) Effect of Salt Extraction on Structure and Functionality of Concentrate Pea Protein Yi Zhang, <i>Aarhus University, Denmark</i></p>	<p>(O15.3) The systemic risk of contamination of recycled packaged food in circular economy Hawraa Ayoub, <i>Université Paris-Saclay, France</i></p>	<p>(O16.3) Conscious and unconscious emotional perception of senior consumers towards dysphagia liquids Noelia Da Quinta, <i>AZTI, Spain</i></p>	<p>(N7.3) Sublethal moderated pressure and ultrasound pre-treatments for improved whole egg pasteurization Jorge Saraiva, <i>University Of Aveiro, Portugal</i></p>	<p>(S03.2) Bio-based innovative bread obtained with pre-fermented ingredients from milling by-products Lorenzo Siroli, <i>University of Bologna, Italy</i></p>	<p>(S04.3) Aflatoxin assessment in blood serum of rural households consuming mouldy grains in Ogun State, Nigeria Eniola Oni, <i>Federal University of Agriculture, Nigeria</i></p>

14:50 - 15:10	(O13.4) Transcriptomic response of <i>Listeria monocytogenes</i> planktonic and sessile cells to plasma-activated water Paula Fernández Gómez, Universidad De León, Spain	(O14.4) Comparing the technological properties of plant-based proteins obtained by dry fractionation and wet extraction Davide De Angelis, University of Bari, Italy	(O15.4) Improving the quality of ready-to-eat Atlantic salmon fillets using soluble gas stabilization (SGS) technology Anita Jakobsen, Norwegian University Of Science And Technology, Norway	(O16.4) Consumer perception of plant-based cheese and yogurt alternatives: Estonian consumers' perspective Helen Saar, Center of Food and Fermentation Technologies, Estonia	(N7.4) Ultrasound effect on the bioactive compounds and physicochemical properties of almond beverages Maria Elena Sosa-Morales, Universidad De Guanajuato, Mexico	(S03.4) Regulatory Aspects of Novel Bio-Based Ingredients for Use in Food, Feed, Pharma, Cosmetics and Packaging Edward Sliwinski, European Federation of Food Science and Technology, the Netherlands	(S04.4) Edible insects for human consumption Diána Bánáti, University of Szeged, Hungary
15:10 - 15:30	(O13.5) The investigation of sanitizer resistance genes in <i>Listeria monocytogenes</i> isolated from different food processing facilities Yue Cheng, University College Dublin, Ireland	(O14.5) Ball milling as a tool to alter the extractability and colloidal state of oat proteins Frederik Janssen, KU Leuven, Belgium	(O15.5) Optical Cleaning Assurance for Reusable PET (re-PET) Food Packaging Samsun Nahar, Loughborough University, United Kingdom	(O16.5) Nutrient-dense, texture-modified and portion-sized hybrid meat designed for senior consumers: perception and behaviour. Clara Talens, AZTI, Food Research, Basque Research and Technology Alliance (BRTA), Spain	(N7.5) Application of pulsed light in a hurdle approach in winemaking process Gianpiero Pataro, University of Salerno, Italy	(S03.5) Life cycle perspectives of bio-based products using biomass residues as feedstock Dirk Hengevooss, University of Applied Sciences and Arts Northwestern Switzerland, Switzerland	(S04.5) Food Waste Recovery: Microwave Assisted Extraction Filiz Hazal, University of Gaziantep, Turkey
15:30 - 15:50	(O13.6) Simulation of Microbial Survival During Fermented Sausages Production to Assess Alternative Formulation Victoria Caballero, Technological University Of Dublin, Ireland	(O14.6) Contribution of plant proteins to structure and physical stability of lean meat analogue model systems Quinten Masijn, KU Leuven, Belgium	(O15.6) Development and characterization of active packaging containing TiO2 bio-nano-composite - cinnamon oil for cheese preservation Shubham Sharma, Technological University, Ireland	(O16.6) Australians perceptions towards edible insects as a future food Jessica Danaher, RMIT University, Australia	(N7.6) Application of cold plasma technology for the shelf-life extension of fish fillets: industrial scale validation George Katsaros, Institute Of Technology Of Agricultural, Greece	(S04.6) Challenges in valorising food waste for small and medium-sized enterprises Hilde, Wijngaard, The Hague University of Applied Sciences, the Netherlands	
15:50 - 16:20	Refreshment Break Poster Session 1 Atrium and Presidents Terrace GNT Young Scientist Competition Nominees present their posters Presidents Terrace						15:55 - 16:15 Special session room 442 High-pressure technologies for sustainable food production Jasna Ivanovic, Uhde High Pressure Technologies, Germany Session sponsored by Uhde High Pressure Technologies