

International Conference on Food Innovation

**foodInnova**  
2017

31 January - 3 February 2017  
Cesena - Emilia-Romagna - Italy

Fourth Edition

# Book of Abstracts

Marco Dalla Rosa, Pedro Fito Maupoey

(Editors)



ALMA MATER STUDIORUM  
UNIVERSITA DI BOLOGNA  
CENTRO INTERDIPARTIMENTALE  
DI RICERCA INDUSTRIALE AGROALIMENTARE

©2017 The Authors.

# EDITORS

**Marco Dalla Rosa**

Alma Mater Studiorum Università di Bologna

**Pedro Fito Maupoey**

Knowledge Management for Food Innovation - KM4FI

All rights reserved. No part of this book may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, without prior written permission from the publisher.

Draft Book of Abstracts  
ISBN 978-2-12-345680-3

Publisher

Knowledge Management for Food Innovation - KM4FI  
Plaza mayor, 12 bajo 46120  
Alboraya, Valencia  
Spain  
VAT B98175003

# Organising Committee

**Pedro Fito Maupoey** *Universidad Politécnica de Valencia, Knowledge Management for Food Innovation, (Spain)*

**Marco Dalla Rosa** *Alma Mater Studiorum - Università di Bologna, (Italy)*

**Fabrizio Abbondanza** *Servizi Integrati d'Area, (Italy)*

**David Arce Grilo** *Universidad Politécnica de Valencia, Knowledge Management for Food Innovation, (Spain)*

**Federica Balestra** *Alma Mater Studiorum - Università di Bologna, (Italy)*

**Enzo Bertoldi** *ASTER, (Italy)*

**Ester Betoret Valls** *Universidad Politécnica de Valencia, (Spain)*

**Noelia Betoret Valls** *Universidad Politécnica de Valencia, (Spain)*

**Luigia Binetti** *Servizi Integrati d'Area, (Italy)*

**Ignacio Blanquer Espert** *Universidad Politécnica de Valencia, Knowledge Management for Food Innovation, (Spain)*

**Liliana Dipinto** *Alma Mater Studiorum - Università di Bologna, (Italy)*

**Francesco Fenga** *OTA, (Italy)*

**Virginia Glicerina** *Alma Mater Studiorum - Università di Bologna, (Italy)*

**Elisa Pérez Ríos** *Knowledge Management for Food Innovation, (Spain)*

**Massimiliano Petracchi** *Alma Mater Studiorum - Università di Bologna, (Italy)*

**Alessandra Riva** *Servizi Integrati d'Area, (Italy)*

**Pietro Rocculi** *Alma Mater Studiorum - Università di Bologna, (Italy)*

**Santina Romani** *Alma Mater Studiorum - Università di Bologna, (Italy)*

**Urszula Tylewicz** *Alma Mater Studiorum - Università di Bologna, (Italy)*

## Scientific Committee

- Marco Dalla Rosa** *Alma Mater Studiorum - Università di Bologna, (Italy)*
- Pedro Fito Maupoey** *Universidad Politécnica de Valencia, (Spain)*
- Jose Miguel Aguilera** *Pontificia Universidad Católica de Chile, (Chile)*
- Lilia Ahrné** *Københavns Universitet (Denmark), European Federation of Food Science and Technology*
- Ester Betoret Valls** *Universidad Politécnica de Valencia, (Spain)*
- Noelia Betoret Valls** *Universidad Politécnica de Valencia, (Spain)*
- Patrizia Brigidi** *Alma Mater Studiorum - Università di Bologna, (Italy)*
- Pilar Buera** *Universidad de Buenos Aires, (Argentina)*
- Fabio Fava** *Alma Mater Studiorum - Università di Bologna, (Italy)*
- Maria Fiorenza Caboni** *Alma Mater Studiorum - Università di Bologna, (Italy)*
- Francesco Capozzi** *Alma Mater Studiorum - Università di Bologna, (Italy)*
- Giovanna Ferrari** *Università degli Studi di Salerno, (Italy)*
- Fausto Gardini** *Alma Mater Studiorum - Università di Bologna, (Italy)*
- Jorge Gerard** *Universidad Nacional de Entre Ríos, (Argentina)*
- Henry Jäger** *Universität für Bodenkultur Wien, (Austria)*
- Dietrich Knorr** *Technische Universität Berlin, (Germany), European Federation of Food Science and Technology*
- Rosalba Lanciotti** *Alma Mater Studiorum - Università di Bologna, (Italy)*
- Huub Lelieveld** *European Federation of Food Science and Technology, (The Netherlands)*
- Keshavan Niranjana** *University of Reading, (United Kingdom)*
- Laura Piazza** *Università degli Studi di Milano, (Italy)*
- Paola Pittia** *Università degli Studi di Teramo, (Italy) ISEKI Food Association*
- Pietro Rocculi** *Alma Mater Studiorum - Università di Bologna, (Italy)*
- Santina Romani** *Alma Mater Studiorum - Università di Bologna, (Italy)*
- Oliver Schlüter** *Leibniz-Institut für Agrartechnik Potsdam-Bornim e.V., (Germany)*
- John Shi** *University of Guelph, (Canada)*
- Valentina Siracusa** *Università degli Studi di Catania, (Italy)*
- Fidel Toldrá Vilardell** *Instituto de Agroquímica y Tecnología de Alimentos, (Spain)*
- Urszula Tylewicz** *Alma Mater Studiorum - Università di Bologna, (Italy)*
- Ye Xingqian** *Zhejiang University, (China)*

## INNOVATION FOR THE ELDERLY: APPLE WITH WATERMELON TEXTURE

**Anna Jofré**<sup>1</sup> (anna.jofre@irta.cat); **Pierre Picouet**<sup>2</sup>; **Margarita Garriga**<sup>1</sup>; **Maria Dolors Guàrdia**<sup>3</sup>

<sup>1</sup> Food Safety Programme, IRTA, Monells, Spain

<sup>2</sup> Research Laboratory GRAPPE, USC-ESA, INRA Angers, France

<sup>3</sup> Food Technology Programme, IRTA, Monells, Spain

**Keywords.** elderly, fruit, shelf-life, high pressure processing, sensory attributes

**Introduction.** Ageing is one of the greatest social and economic challenges of the 21<sup>st</sup> century for European societies. By 2025 more than 20% of Europeans will be 65 or over, with a particularly rapid increase in numbers of over-80s<sup>1</sup>. The development of innovative foods adapted to the sensory, nutritional, physical and logistic needs of the aged is a challenge for the food industry. The aim of the present study, in the framework of the European project OPTIFEL<sup>2</sup>, was to sensory evaluate and validate the production process and shelf-life of an innovative apple product enriched in vitamin C and submitted to high pressure processing (HPP).

**Materials and Methods.** Apple with watermelon texture was prepared by immersing apple wedges in a covering liquid (apple juice containing either 0.2% ascorbic acid (A) or 0.2% ascorbic acid + 0.3% CaCl<sub>2</sub> (AC)) at a 4/6 ratio. Portions of 250 g were packaged in stand up pouches and submitted to HPP (450 MPa, 3 min). A sensory analysis comparing A and AC batches was performed by trained panelists. Shelf-life was evaluated through enumeration of mesophilic and psychrotrophic bacteria and yeasts and moulds at selected times during storage at 8°C up to 30 days in pressurized and non-pressurized samples. HPP-treatment lethality was validated through a challenge test in AC product inoculated 1% with a cocktail of 3 *Listeria monocytogenes* and 3 *Salmonella* strains at 6-8 log cfu/g each species. Enumeration of pathogens was performed before and immediately after treatment.

**Results.** Apple with CaCl<sub>2</sub> showed significantly higher scores for hardness and crunchiness and lower scores for crumbliness in comparison with samples without CaCl<sub>2</sub>. Similarly, acceptability was significantly higher (5.8) for samples with CaCl<sub>2</sub> when compared with those containing only ascorbic acid (5.1). Physicochemical analyses recorded soluble solids content and pH values of 12.4 °Brix and 3.7, respectively. Initial levels of mesophilic bacteria were ca. 4 log cfu/g while psychrotrophic bacteria and yeasts and moulds were at 3 log cfu/g. In non-HPP treated batches levels of mesophilic, psychrotrophic and yeasts and moulds increased up to 6.5-7 log cfu/g after 30 days of storage at 8°C. In HPP-treated samples levels remained below the limit of detection (10 cfu/g) during the whole storage. No significant differences were found between A and AC batches. Challenge test results showed that HPP reduced the counts of *L. monocytogenes* and *Salmonella* at least 6 and 8 log units, respectively, proving the validity of the lethality treatment required to achieve pasteurization standards.

**Conclusions.** Apple wedges with watermelon texture, an apple product enriched with ascorbic acid and CaCl<sub>2</sub>, is a technologically and sensory innovative soft-solid product. The designed manufacturing process, including HPP, ensures microbiological quality and safety of the product throughout its shelf-life even if temperature abuse (8°C) occurs.

### References.

1. European Commission. Public Health. [http://ec.europa.eu/health/ageing/policy/index\\_en.htm](http://ec.europa.eu/health/ageing/policy/index_en.htm)
2. Optifel project web page: <http://www.optifel.eu/>

**Acknowledgements.** FP7-311754-OPTIFEL