ProdAl Scarl – University of Salerno | e-mail: nonthermal@prodalricerche.it (mailto:nonthermal@prodalricerche.it) | Tel.: +39 089 964028

(https://www.facebook.com/events/201481263950686/) () () (https://www.linkedin.com/groups/1785303) (https://goo.gl/maps/xMjQGv4RK312)

(http://nonthermal.prodalricerche.com/) (http://nonthermal.prodalricerche.com/) (http://nonthermal.prodalricerche.com/)

September 25 – Morning session

8:00 AM-8:30 AM – Late registration

8:30-9:00 – Welcome and Workshop presentation

Giovanna Ferrari

University of Salerno and ProdAl Scarl, Italy

Gustavo Barbosa-Canovas

Pulsed Electric Fields (PEF) processing of fruit and vegetables

Michael A. Kempkes

Diversified Technologies, Inc., USA

Efficacy of pulsed electric fields and active compounds used alone and in combination for the inactivation of Campylobacter jejuni in liquids and chicken

Isabel Clemente Arellano, S. Condón-Abanto, S. Pedrós-Garrido, P. Whyte, J.G. Lyng

University College Dublin, Ireland

Non-thermal processing by gamma and electron beam radiation for food preservation

Amilcar L. Antonio[1], I. C.F.R. Ferreira[1], P. M. P. Santos[2], S. Cabo Verde[2]

[1]Instituto Politécnico de Bragança, Portugal

[2]Universidade de Lisboa, Portugal

9:50-10:30 – Flash presentations of selected posters

Inactivation of Alicyclobacillus acidoterrestris in apple juice using a combined treatment of a thin layer-continuous flow high intensity pulsed light reinforced by mild electric field and essential oil nanoemulsions

Özge Taşan, F. Icier, T. Baysal

Ege University, Turkey

Non-thermal Processing by Gamma and Electron beam Radiation for Food Preservation

Amilcar L. Antonio[1], Isabel C.F.R. Ferreira[1], Pedro M. P. Santos[2], Sandra Cabo Verde[2]

[1] Centro de Investigação de Montanha (CIMO), Instituto Politécnico de Bragança, Bragança, Portugal;
[2] Centro de Ciências e Tecnologias Nucleares (C2TN), Instituto Superior Técnico, Universidade de Lisboa, Bobadela, Portugal.

Abstract: Food waste represents a significant issue and is in the target of national and international authorities, as a way to feed a growing population, to preserve earth resources and minimize environmental impacts. Preservation for food safety and quality improvement is the base to guarantee nutritional and healthy products available in the market. The use of ionizing radiation (IR) for food processing has been scrutinized and validated for a long time by the scientific community and approved by international organizations, such as EFSA, WHO and FDA, regulated by EU Directives and by the *Codex Alimentarius*. This non-thermal technology has proven to be efficient in the improvement of both food quality and safety parameters in a wide range of food products. However, further research is needed to study its effects in other natural food matrices in order to enlarge its range of application. We have been working on the validation of an IR treatment with Mediterranean products such as chestnuts, wild edible mushrooms and cherry tomatoes. Food samples were irradiated with two types of IR: gamma photons emitted by a ^{60}Co experimental irradiator and a 10 MeV electron beam delivered by a R&D linear electron accelerator. Doses used ranged from 1 to 6 kGy. Here are presented the impact of gamma and electron beam radiation on major nutrients and bioactivity of these Mediterranean products. The results show that the storage time induces more changes than the irradiation processing, independently from the type of product and the applied dose. This clearly indicates a potential contribution of this non-thermal technology in boosting European agricultural products exports to other demanding markets. Overall, a significant positive impact is expected in the agrifood chains, from the European local resources valorisation to the wider consumption of nutritionally and healthier food products

Reference

"Food Irradiation Technologies: Concepts, Applications and Outcomes". I.C.F.R. Ferreira, A.L. Antonio, and S. Cabo Verde (Ed.s), Royal Society of Chemistry, UK, 2018

Acknowledgements

Foundation for Science and Technology (FCT, Portugal) and FEDER under Programme PT2020 for financial support to CIMO (UID/AGR/00690/2013), C2TN (UID/Multi/04349/2013), International Atomic Energy Agency (IAEA) Coordinated Research Project D61024 DEXAFI.