

International FoodTec Conference

Shaping the Future
of Sustainable
Food Ecosystems



1st Edition '25

Interreg



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União Europeia

España - Portugal



Net4food

RED DE INVESTIGACIÓN E INNOVACIÓN
PARA EL SECTOR ALIMENTARIO

BOOK OF ABSTRACTS

-  Challenges and Opportunities in the Food System of the Transborder Region
-  Innovation, Technology, and Food Security in a Changing Global Landscape
-  Nutrition and Consumer Trends: Enhancing the Value of Endogenous Resources
-  Quality, Food Safety, and Environmental Responsibility
-  Marketing, Digitalization, and the Future of the Food Sector
-  Strategic Developments in the Net4Food Project

27th to 29th of October 2025

Bragança 2025

TECHNICAL DATA

Title

International FoodTec Conference – *Shaping the Future of Sustainable Food Ecosystems*

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INDEX

WELCOME TO THE IFTC 2025	1
IFTC 2025 COMMITTEE	3
GENERAL INFORMATION	7
CONFERENCE PARTICIPATION	10
SCIENTIFIC INFORMATION	11
SOCIAL EVENTS	14
AGENDA	17
SCIENTIFIC PROGRAM	20
ROUNDTABLE I	27
ROUNDTABLE II	37
REFLECTIVE LECTURE	54
PLENARY LECTURES	56
KEYNOTE LECTURES	69
ORAL PRESENTATIONS	97
POSTER PRESENTATIONS	138
SUPPORT	376

WELCOME TO THE

IFTC 2025



The banner features a light blue background with a dark blue central panel. On the left, the conference title 'International FoodTec Conference' is displayed in bold, with a Wi-Fi symbol above it. Below the title, the subtitle 'Shaping the Future of Sustainable Food Ecosystems' and the location 'Bragança 2025' are listed, followed by the dates '27th to 29th of October 2025'. The central panel contains a list of topics: 'Challenges and Opportunities in the Food System of the Transborder Region', 'Innovation, Technology, and Food Security in a Changing Global Landscape', 'Nutrition and Consumer Trends: Enhancing the Value of Endogenous Resources', 'Quality, Food Safety, and Environmental Responsibility', 'Marketing, Digitalization, and the Future of the Food Sector', and 'Strategic Developments in the Net4Food Project'. To the right of this panel is a photograph of hands holding soil with small green plants growing. At the bottom, a row of logos includes Interreg, Net4Food, IOP, Universidade de Vigo, PORTUGAL FOODS, INL, AQUA VALOR, and the Galician Government logo.

The **I International FoodTec Conference** – *Shaping the Future of Sustainable Food Ecosystems* – will be held from the **27th to 29th of October 2025**. The event convenes together leading experts in advanced research, innovative food solutions, prominent stakeholders from the food industry, and policymakers focused on strategic planning and funding for the sector.

Organized under the scope of the European **Net4Food Project** – *Research and Innovation Network for the Food Sector in the Cross-Border Region* – and funded by **Interreg POCTEP**, the conference aims to enhance a network of excellence within the food sector of the **Galicia-Northern Portugal Euroregion**. Additionally, it will strengthen the scientific and technological capacities of the food industry by driving innovation, adding value to regional endogenous resources, and promoting sustainable, safe, and healthy food practices.

The conference is closely aligned with the establishment of the future **Iberian FoodTec Lab (IFL)**, an international reference center for technological innovation in the food sector. Attendees will engage in insightful discussions addressing challenges and opportunities within the industry, focusing on sustainability, innovation, and knowledge transfer. Key topics include **innovative food technologies, emerging nutritional trends, food quality and safety, consumer**

behavior, digital transformation, and strategic developments within the food sector. A highlight of the event will be the presentation of the advancements from the **Net4Food Project**.

The **I International FoodTec Conference** is structured around six core topics:

-  Challenges and Opportunities in the Food System of the Transborder Region
-  Innovation, Technology, and Food Security in a Changing Global Landscape
-  Nutrition and Consumer Trends: Enhancing the Value of Endogenous Resources
-  Quality, Food Safety, and Environmental Responsibility
-  Marketing, Digitalization, and the Future of the Food Sector
-  Strategic Developments in the Net4Food Project

The **Net4Food Project** brings together a distinguished consortium coordinated by the **Polytechnic Institute of Bragança**, including strategic partners such as the **University of Vigo**, the **International Iberian Nanotechnology Laboratory (INL)**, the **Galician Food Cluster (Clusaga)**, **PortugalFoods**, and the collaborative laboratories **MORE CoLAB** and **AquaValor**. Their expertise reinforces the development of pioneering initiatives, laying the foundation for an innovative hub in the **European Food Sector**. This collaborative effort is posed to advance sustainable practices and promote transformative changes within Food Ecosystems.

All the information contained in this Book of Abstracts is accurate at the time of its publication. The Conference Organizers reserve the right to make modifications.

IFTC 2025 COMMITTEE

Scientific committee



Lillian Barros
(CIMO/IPB, Portugal)



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(IPB, Portugal)



Lorenzo Pastrana
(INL, Portugal)



David Fernández Calviño
(UVigo, Espanha)



Alexandre Gonçalves
(MORE, Portugal)



Maria José Alves
(AquaValor, Portugal)



Deolinda Silva
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Organizing committee



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Noelia Dosil (CLUSAGA,
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Filipa Reis
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Filipa Mandim
(CIMO/IPB, Portugal)



Ângela Fernandes
(CIMO/IPB, Portugal)

GENERAL INFORMATION

Conference venue

The conference will be held at the **Hotel Exe São Lázaro** in Bragança, Portugal, in the **Salão Armindo Correia**. The hotel is conveniently located just 2 km from the historical center of Bragança.

Day 1 – Day 3

Monday – Wednesday

October 27th – October 29th

09:00 AM – 6:00 PM

Exe São Lázaro

Avenida do Sabor, Nº 2

5300-367

Bragança, Portugal

Telephone: (+351) 273 310 070

Mobile: (+351) 925 272 609

Fax: (+351) 273 310 071

General e-mail:

scfom@exesaolazaro.com



Getting to and from the venue

You can use private transportation (taxi) to get to the congress venue.

Registration and information desk

The Registration Desk will be located in the hall of the in the Salão Armindo Correia at the Hotel Exe São Lázaro and will be open for all three days of the conference: Monday to Wednesday, 9:00 – 6:00 PM.

All attendees must be registered for the conference. Please proceed to the Registration Desk to collect your badge and conference materials. Admission to the conference is permitted only to those wearing the official conference badge. If a badge is lost or misplaced, please contact the Registration Desk.

Internet access

A wireless network will be available at Hotel Exe São Lázaro. Please contact the Information Desk to obtain the username and password, if needed.

Smoking policy

As of 1 January 2008, Portuguese legislation prohibits smoking in all public places, including cafés, bars, and restaurants (except in designated smoking areas). Smoking is permitted only outside the conference venue.

Electricity supply

The standard voltage in Portugal is 220 V. If you need a plug or power adapter, you can purchase one at electronics stores.

Transportation

In Bragança, a city bus service is available for travel around the city center. Bus tickets start from 2.50 €. For more route's options, please visit:

<https://bus.cm-braganca.pt/routes>

Taxis operate 24 hours a day and can be ordered from the conference venue or your hotel. Taxis can also be hailed on the streets if they display a green light with the word "TAXI". Please avoid using unlicensed taxis, which are ordinary cars operated by drivers soliciting fares on the street.

Renting a car can be a convenient option if you plan to stay in areas farther from the city center. Car rentals are generally affordable, and having a car allows you to take longer trips. However, to fully experience the city, it is best to explore the city center on foot, as many of its charming streets are accessible only by walking.

Emergencies

For police, ambulance, or fire services, dial 112.

Weather

For up-to-date weather information, please visit the Portuguese Meteorology Institute website:

<https://www.ipma.pt/pt/index.html>

Tourism and leisure

The conference venue is located just 2 km from the historical center of Bragança. Step outside and enjoy the city! For more information, please visit:

<https://turismo.cm-braganca.pt/>

Currency

Portugal uses the Euro (€). Traveler's cheques can be exchanged for cash at banks and currency exchange offices.

Liability

The Organizing Committee of the conference accepts no liability for personal injuries or loss/damage to personal property incurred during, or as a result of, the conference or its social events. The Committee reserves the right to make any changes, modifications, or omissions to the information published in this book.

Insurance

The Conference Organizers cannot accept any responsibility for personal accidents and damage to the private property of Conference and Exhibition Delegates.

CONFERENCE PARTICIPATION

Certificate of Attendance

All registered participants will receive a Certificate of Attendance for the IFTC via email within a few days following the conclusion of the conference.

Certificate of Presentation

Participants who delivered a presentation at the IFTC will receive a Certificate of Presentation via email within a few days following the conclusion of the conference.

Photography policy

Recording and photographing conference presentations is permitted.

SCIENTIFIC INFORMATION

Roundtable

Two roundtables will be held during the IFTC, each addressing key aspects of the Iberian agri-food ecosystem.

Roundtable I – Challenges and Opportunities in the Food System of the Transborder Region

This 1-hour session will discuss the main challenges and opportunities faced by cross-border food systems, particularly in Northern Portugal and Galicia. It will highlight the strategic relevance of establishing the Iberian Food Laboratory as a shared infrastructure to foster innovation, strengthen territorial cooperation, and secure sustainable funding for regional development.

Roundtable II – Strategic Developments in the Net4Food Project

This roundtable will have a duration of 1.5 hours and aims to encourage the exchange of experiences and perspectives on the present and future of the Iberian agri-food sector. Six Portuguese and Spanish companies, together with the agri-food industry clusters PortugalFoods and CLUSAGA, and the collaborative laboratories MORE CoLAB and AquaValor, will reflect on the main challenges, innovation strategies, and emerging trends shaping the evolution of the sector.

Reflective lecture

One Reflective Lecture will take place, with a duration of 45 minutes.

Plenary lecture

A total of **six** Plenary Lectures will be held, each lasting 30 minutes.

Keynote lecture

A total of **thirteen** Keynote Lectures will be held, each lasting 20 minutes.

Oral presentation

A total of **thirty-six** Oral Presentations will be held, each lasting 5 minutes.

Please check your Oral Presentation code in the Oral Presentation List included in this book.

Thought exchange

At the end of each session, there will be a 5-minute Q&A.

Presentations upload

All conference presentations will all take place in the Salão Armindo Correia at Hotel Exe São Lázaro. Personal computers will not be allowed for presentations; speakers may use their personal USB drives. Accepted formats are PowerPoint (.pptx) or PDF.

An IT Desk will be available on-site. All speakers must upload their presentations at least two hours before the start of their respective session.

E-Poster presentation

Posters will be displayed on LCD monitors in the hall of the Salão Armindo Correia at Hotel Exe São Lázaro throughout the three days of the conference as part of the scientific program.

The poster should be prepared in portrait orientation, with a maximum size of 90 cm (height) × 50 cm (width), and saved in PDF format.

Please check your poster code in the Poster List included in this book.

Each poster abstract will be assigned to a specific display screens as follows:

Monitor	#Poster
1	1 – 52
2	53 – 104
3	105 – 156
4	157 – 208

Poster presentations will take place during the coffee breaks on each conference day. Presenters are expected to be at their posters during these breaks to engage with attendees and answer questions.

Awards

Oral presentations and posters will be evaluated by a selective committee of experts appointed by the Conference Scientific Committee. The highest-scoring contributions will receive the Best Oral Presentation and the Best Poster awards, provided by ReadyToPub – Author Services Provider. These awards will be officially presented during the Closing Session of the conference.

The competition is open exclusively to undergraduate, master's, and doctoral students. For further details, please refer to the ReadyToPub Awards Regulation.

SOCIAL EVENTS

Different activities have been planned to give participants the opportunity to explore the city, its culture, and traditions. In addition to the scientific program, participants will be able to socialize during the coffee breaks, lunches, Welcome Cocktail, and Conference Gala Dinner.

Typical Portuguese dishes with a contemporary twist, accompanied by a selection of Portuguese wines, will be served.

The social events will also feature dynamic performances, including traditional cultural presentations, ensuring an unforgettable experience!

Please inform the Organizing Committee of any dietary requirements.

Coffee breaks & lunches

Coffee breaks and lunches during the conference are free for registered participants who have confirmed their attendance.

Coffee Breaks - served in the hall of the conference room:

- Day 1, Monday, 27th: 4:00 – 4:30 PM
- Day 2, Tuesday, 28th: 11:00 – 11:30 AM and 4:00 – 4:30 PM
- Day 3, Wednesday, 29th: 10:40 – 11:10 AM

Lunches - served at the Hotel Exe São Lázaro, Alcina Ramos room.

- Day 1, Monday, 27th: 12:45 – 14:30 PM, for confirmed participants
- Day 2, Tuesday, 28th: 12:45 – 14:30 PM, for confirmed participants
- Day 3, Wednesday, 29th: 13:00 – 15:00 PM, for invited guests only

Welcome Cocktail

The Welcome Cocktail is free for registered participants who have confirmed their attendance. Caretos, a traditional masked character, will be present to entertain participants during the social event. Transportation from the Hotel to the Restaurant will be provided by the Organizing Committee.

Day 1

Monday, October 27th

7:30 – 11:00 PM

Casa do Lago, Albufeira do Azibo

Fraga da Pegada

5340-410

Santa Combinha

Macedo de Cavaleiros

Telephone:

(+351) 917 343 125

General e-mail:

clientes@acasadolago.pt

Dress code:

Formal/Smart Casual



Gala Dinner

The Gala Dinner is open to participants who have confirmed their attendance. The cost is €50 per person, payable at the registration desk upon arrival. Invited guests may attend free of charge.

Participants will be entertained by Grupo D'Alma Fado, performing traditional Portuguese songs.

Transfer from the Hotel Exe São Lázaro to the Quinta da Carvalhinha will be provided by the Organizing Committee via a tourist train. Time permitting, guests will have the opportunity to enjoy a panoramic tour of the city center aboard the tourist train.

Day 2

Tuesday, October 28th

8:00 – 11:00 PM

Quinta da Carvalhinha

Hotel Estalagem Turismo

Estrada de Turismo - Cabeça Boa

5300-852

Bragança, Portugal



Telephone:

(+351) 273 324 204

General e-mail:

infoquintadacarvalhinha@gmail.com



Dress code:

Formal/Smart Casual



AGENDA

Day 1 | 27th OCTOBER

Welcome Ceremony Challenges and opportunities in the food system of the Transborder Region

09h00 Registration

09h30 Opening Session

Manuel Reigosa, UVigo
Orlando Rodrigues, IPBragança
CCDR Norte *
Lillian Barros, IPBragança

10h00 Round Table

Moderator: Deolinda Silva, PT Foods
Jesus Barreiro-Hurle, European Commission
Jaime Piçarra, IACA
Manuel Reigosa, UVigo
Orlando Rodrigues, IPBragança
Isabel Ferreira, IPBragança
Lorenzo Pastrana, INL
Xosé Lago García, Xunta de Galicia
Raquel Rocha, ADC
CCDR Norte *

12h00 Reflective Lecture

Manuel Heitor, IST

12h45 Lunch | E-Poster Session

Session 1. Innovation, Technology and Food Security in a Changing Global Landscape

14h30 Plenary Speaker

Isabel Ferreira, IPBragança

15h00 Keynote Speaker

Veronica M. T. Lattanzio, CNR

15h20 Oral Presentation Session

16h00 Coffee Break | E-Poster Session

16h30 Plenary Speaker

Pedro Queiroz, FIPA, FMUL

17h00 Keynote Speaker

Mohamed Wageih, PRIMA

17h20 Oral Presentation Session

19h30 Welcome Cocktail

* to be confirmed

Day 2 | 28th OCTOBER

Session 2. Nutrition and Consumer Trends: Enhancing the Value of Endogenous Resources

- 09h00** **Plenary Speaker**
Giorgia Spigno, UCSC
- 09h30** **Keynote Speakers**
Manuela Pintado, UCP
09h50 Mario M. Martinez, UVa
- 10h10** **Oral Presentation Session**
- 11h00** **Coffee Break | E-Poster Session**
- 11h30** **Keynote Speakers**
Victor Freitas, UPorto
11h50 José Teixeira, UMinho
- 12h10** **Oral Presentation Session**
- 12h45** **Lunch | E-Poster Session**

Session 3. Quality, Food Safety and Environmental Responsibility

- 14h30** **Plenary Speaker**
Carlos das Neves, EFSA
- 15h00** **Keynote Speakers**
Avelino Álvarez-Ordóñez, ULE
15h20 Ana Barros, UTAD
- 15h40** **Oral Presentation Session**
- 16h00** **Coffee Break | E-Poster Session**
- 16h30** **Plenary Speaker**
María José Arreola, IBERO Puebla
- 17h00** **Keynote Speakers**
Manuel Vázquez Vázquez, USC
17h20 Patricia Morales, UCM
- 17h40** **Oral Presentation Session**
- 20h00** **Event Dinner with musical event**

Day 3 | 29th OCTOBER

Session 4. Marketing, Digitalization and the Future of the Food Sector

09h00 **Plenary Speaker**
Lan van Wassenaeer, WUR

Keynote Speakers
09h30 Paola Giavedoni, FoodValley NL
09h50 Rui Costa Lima, Sense Test
10h10 Beatriz Oliveira, UPorto

10h30 **Oral Presentation Session**

10h40 **Coffee Break | E-Poster Session**

Session 5: Presentation of the Net4Food Project

11h10 Lillian Barros, IPBragança

11h20 **Round Table**
Moderator: Lorenzo Pastrana, INL
Helena Jamardo, CLUSAGA (ES)
Deolinda Silva, PortugalFoods (PT)
Alexandre Gonçalves, MORE CoLAB (PT)
Maria José Alves, AquaValor (PT)
Elisabete Ferreira, Pão de Gimonde (PT)
Filipe Centeno, Proenol (PT)
Carolina Dias, Casa Mendes Gonçalves (PT)
Pedro Babo, Landratech (PT)
Iván García, Néboda Farms (ES)
M.^a Rocío Cid Díaz, Grupo Cuevas (ES)

12h45 **Final Remarks: The Impact of the Net4Food**
David Fernández Calviño and Lillian Barros

15h00 **Satellite Event**
Moderated by ReadyToPub
"How can scientific writing help you?"

SCIENTIFIC PROGRAM

Day 1 Monday, October 27 th	
Welcome Ceremony	Challenges and Opportunities in the Food System of the Transborder Region Chair: Lillian Barros
09:00 – 09:30	Registration
09:30 – 10:00	Opening Session Orlando Rodrigues (Instituto Politécnico de Bragança) Manuel Reigosa (Universidad de Vigo) (Comissão de Coordenação e Desenvolvimento Regional do Norte)* Lillian Barros (Instituto Politécnico de Bragança)
10:00 – 12:00	Roundtable Jesus Barreiro-Hurle (European Commission) Jaime Piçarra (Associação Portuguesa dos Industriais de Alimentos Compostos para Animais) Manuel Reigosa (Universidad de Vigo) Orlando Rodrigues (Instituto Politécnico de Bragança) Isabel Ferreira (Instituto Politécnico de Bragança) Lorenzo Pastrana (International Iberian Nanotechnology Laboratory) Xosé Lago García (Xunta de Galicia) Raquel Rocha (Agência para o Desenvolvimento e Coesão) (Comissão de Coordenação e Desenvolvimento Regional do Norte)* Chair: Deolinda Silva (PortugalFoods)
Welcome Ceremony	Reflective Lecture Chair: João Barreira
12:00 – 12:45	Emerging challenges and opportunities for science and innovation in Europe: the next multiannual financial framework (2028–2034) and challenges in food science Manuel Heitor (Instituto Superior Técnico)
12:45 – 14:30	Lunch E-Poster Session
Session 1	Innovation, Technology, and Food Security in a Changing Global Landscape Chairs: Fátima Martins and Ana Paula Pereira
14:30 – 15:00	PL1 - Research & innovation initiatives in the agro-food sector Isabel Ferreira (Instituto Politécnico de Bragança)

15:00 – 15:20	KN1 - Cultivating multi-stakeholder collaboration and innovation in food safety: R&I priorities for a safe transition towards sustainable food systems Veronica M. T. Lattanzio (National Research Council of Italy)
15:20 – 15:25	OP1 - BRAINR: the brain of the food industry João Santos (Brainr)
15:25 – 15:30	OP2 - Nutritional profile, polyphenol bioaccessibility, and functional potential of walnut oil by-products assessed through simulated digestion and cell-based model Rafael Mascoloti Spréa (Instituto Politécnico de Bragança)
15:30 – 15:35	OP3 - Selenium biofortification of swiss chard microgreens under indoor vertical farming conditions Alexis Pereira (Instituto Politécnico de Bragança)
15:35 – 15:40	OP4 - Novel processing technologies to address by-products valorization, new food trends, and scale-up challenges Viviana Monteiro (INOV.LINEA, TAGUSVALLEY)
15:40 – 15:45	OP5 - Characterization of multilayer bacterial cellulose-chitosan films loaded with gallic acid for innovative active food packaging Patricia Cazón (Universidad de Santiago de Compostela)
15:45 – 15:50	OP6 - Role of protein composition and refinement level in plant protein structure and functionality during hydrothermal processing Parle Florencia (Universidad de Valladolid)
15:50 – 15:55	OP7 - A soft matter approach to fibre for the design of sustainable and healthier foods Patricia Lopez-Sanchez (Instituto de Investigaciones Marinas)
15:55 – 16:00	OP8 - Subcritical water treatment for enhancing fiber solubility and nutritional value of cereal brans by-products Diogo Salvati (Universidad de Valladolid)
16:00 – 16:30	Coffee Break E-Poster Session
Session 1	Innovation, Technology, and Food Security in a Changing Global Landscape Chairs: Cristina Caleja and Eliana Pereira
16:30 – 17:00	PL2 - Innovation, technology, and food security in a changing global landscape Pedro Queiroz (Federação das Indústrias Portuguesas Agro-Alimentares, Universidade de Lisboa)
17:00 – 17:20	KN2 - Driving innovation for mediterranean food security: PRIMA's impact through research and technology. Showcasing research, innovation, and policy synergies to build resilient agro-food systems in the mediterranean Mohamed Wageih (PRIMA)
17:20 – 17:25	OP9 - Unveiling the role of polyphenols in modulating gluten proteins: a molecular and functional perspective Jorge Pardellas Soto (Universidad de Vigo)
17:25 – 17:30	OP10 - Advancing food protein functionality through ohmic heating Ricardo N. Pereira (Universidade do Minho)

17:30 – 17:35	OP11 - Valorization of <i>Agaricus bisporus</i> by-products: incorporation of fermented and non-fermented flours into gluten-free bread nutritional, functional, and technological impact Ana Saldanha (Instituto Politécnico de Bragança)
17:35 – 17:40	OP12 - Chemical and bioactive characterization of propolis extracts and application in food preservation Aritson Tolentino (Instituto Politécnico de Bragança)
17:40 – 17:45	OP13 - Clean-label smoothies with apple and carrot pomaces: rheology and antioxidant stability Saeed Salari (Universidade de Lisboa)
17:45 – 17:50	OP14 - Effect of dietary polyphenols in bioaccessibility, bioavailability and further allergenicity of immunogenic proteins Rodolfo Simões (Universidad de Vigo)
17:50 – 18:00	Thought Exchange Q&A Session
19:30 – 23:30	Welcome Cocktail Casa do Lago (Albufeira do Azibo)

Day 2 Tuesday, October 28 th	
Session 2	Nutrition and Consumer Trends: Enhancing the Value of Endogenous Resources Chairs: Filipa Reis and Ângela Fernandes
09:00 – 09:30	PL3 - Upcycling: opportunities and challenges Giorgia Spigno (Università Cattolica del Sacro Cuore)
09:30 – 09:50	KN3 - Transforming endogenous resources into high-value ingredients with value creation Manuela Pintado (Universidade Católica do Porto)
09:50 – 10:10	KN4 - Designing next-generation plant polysaccharide ingredients: from soft matter to precision nutrition Mario M. Martinez (Universidad de Valladolid)
10:10 – 10:15	OP15 - Pancreatic lipase exhibits selective esterase activity on carboxyl linked hydroxycinnamic acid glucosides Pablo Gallego-Lobillo (Aarhus University)
10:15 – 10:20	OP16 - in vitro analysis of starch digestibility and predicted glycemic index in traditional and industrial breads from the galician market M. Pilar España-Fariñas (Universidad de Santiago de Compostela)
10:25 – 10:30	OP17 - Prebiotic potential of apple pomace before and after simulated digestion: an in vitro evaluation with probiotic strains Liege Aguiar Pascoalino (Instituto Politécnico de Bragança)
10:35 – 10:40	OP18 - From waste to food: valorization of oat pulp from commercial oat drinks Sara Berguices (Universidad de Valladolid)
10:40 – 10:45	OP19 - Valorization of fruit distillation pomaces Ofélia Anjos (Instituto Politécnico de Castelo Branco, Centro de Biotecnologia de Plantas da Beira Interior)
10:45 – 10:50	OP20 - From ham to 3D snacks: towards sustainable solutions Lisiane Carvalho (Universidade de Lisboa)
10:50 – 10:55	OP21 - Highly protein-dense spreads: a strategy for micronutrient delivery in nutritionally vulnerable populations Sheyma Khemiri (Universidade de Lisboa)
10:55 – 11:00	OP22 - Sustainable insect proteins: evaluating digestibility, allergenicity, and inflammatory potential Lisete M. Silva (Universidade do Porto)
11:00 – 11:30	Coffee Break E-Poster Session
Session 2	Nutrition and Consumer Trends: Enhancing the Value of Endogenous Resources Chairs: Sara F. Vieira and Filipa Mandim
11:30 – 11:50	KN5 - Multi-omics characterization of emerging pigmented wheat genotypes: nutritional, molecular and functional perspectives Victor Freitas (Universidade do Porto)

P164 | ACORN PRE-DRYING: IMPLICATIONS FOR THE FOOD INDUSTRY

Bernardo Farrero^{1,2*}, Luis Frólén Ribeiro^{1*}, Antonio Famiglietti², Pedro Babo³

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In industry, 74% of the energy consumed is used in the form of heat. The food sector is characterised by a high share of processes that rely on industrial heat [1]. However, 90% of this thermal energy currently comes from fossil fuels, and only 9% is supplied by renewable sources [2]. The adoption of solar thermal technologies in the food industry offers multiple benefits that support its viability as an energy alternative to overcome this caveat. Firstly, by relying on a renewable and stable source. Manufacturers can reduce production costs and limit their exposure to the volatility of fossil fuel prices, thereby ensuring greater longterm price stability and predictability [3]. These reductions in energy costs may also be reflected in lower prices for the end consumer. Solar-assisted dehydration enables a decrease in moisture content, thereby limiting microbial growth and food spoilage [3]. In this regard, Solar Heat for Industrial Processes (SHIP) may also address food security concerns as storage losses are estimated to reach up to 20%, posing a critical challenge to food security [4].

The installation of in-situ pre-dehydration systems near harvesting zones provides clear benefits for energy efficiency and product quality. The Iberian Peninsula, notably, benefits from very high solar radiation, with many clear-sky days and extended sunlight periods, making it particularly suitable for solar-based predehydration systems. By lowering produce weight and moisture before transportation, these systems decrease fossil energy demand during both industrial drying and large-scale transport [5]. This approach reduces the final product cost, as demonstrated by an in-situ solar dryer used for acorns in Alentejo holm oak groves. The passive, indirect mobile dryer, fitted with hanging bags, reduces acorn moisture content by 15% after 72 hours of drying, delays fruit spoilage, and cuts large-scale industrial heat input [4,6]. Thermal energy data from a factory case at Landratech, an acorn food producer involved in the MEDACORNET project, indicate that 15% in-situ pre-dehydration cuts thermal energy use by 52% during both initial and final drying stages of acorn flour manufacture [3]. This combined method lowers fossil fuel use, reduces losses, improves energy efficiency, and supports sustainability in the food processing sector.

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