

Ecodesign and sustainability of bio-based products

- **Design and validate a sustainable, reproducible and scalable process for obtaining postbiotics** ingredient from functionally relevant strains + functional assessment, safety, standardization and regulatory compliance.
- **Identify technical performance requirements for bio-based materials for food applications**, including food contact, preservation needs, barrier properties and material functionality.
- **Define specifications for final bio-based packaging solutions** and **validate their functional performance** under industrial conditions: barrier behaviour, durability (heat/sterilisation), Modified Atmosphere compatibility, shelf-life extension potential, and Food Contact Compatibility (FCC: global and specific migration).*
- **Pilot-scale validation** of novel packaging solutions, including pre-series production (50–100 kg/h) of packaged food products to assess industrial feasibility.*
- Selection of representative food matrices and **definition of end-use performance criteria to evaluate the effectiveness of bio-based packaging across different value chains**.
- **Assessment of enhanced functional characteristics** of the new materials at pilot scale for their integration in food industry processes.

* A partner is required to provide the final packaging material.

Pre-normative research and standardization support

- Identify **gaps in methods and quality standards** for novel bio-based ingredients and fermentation-derived products.
- **Verify the regulatory status** of new bio-based materials and products for food contact applications at national (Spain) and EU level.
- **Demonstrate safety of new packaging materials**, including FCC (global and specific migration), and tests required under EU FCM legislation.

Stakeholder engagement and community building

- Engage **industrial partners** from the agri-food sector through CNTA's network of associated companies.
- **Evaluate and promote the readiness of packaging producers, food companies and consumers** (Spain and EU) to adopt new bio-based solutions using focus groups, interviews, surveys, workshops and co-creation methodologies.
- Support **knowledge transfer** through guidelines and dissemination materials targeting relevant stakeholders in the agri-food sector.

CNTA was a partner of **PARABIOTICS** and **PREDISMET**, which aimed to identify and develop probiotic, prebiotic and/or postbiotic agents that modulate the gut microbiota, and to characterize them functionally and safely for future food or health-applications. In the project **NEWPACK**, CNTA validated the production of two new bio-plastics based on PHB-PLA blends with antioxidant/antibacterial properties and nanoadditives from cellulose and chitin.

We're CNTA

NATIONAL CENTER FOR FOOD
TECHNOLOGY AND SAFETY.



Team especie CNTA

- +250 Professionals
- +500 Associated companies
- Governing board
Institutional and associated companies



**6 working
centers:**
San Adrián,
Alesón, Calahorra, Logroño, Madrid, Pamplona

Facilities and equipment

- 14 Labs
- 12 Pilot plants for food processes
- 3 Platforms for advanced characterization :
Metabolomics, cell culture and C. elegans

*Cutting-edge
knowledge and
technology.*



CNTA in 2025

Research

Reports

Consumer studies

Analytical services

Consulting

Training

Events

47

Knowledge uptake
projects

172

Contractual R&D
projects

97

Training
actions

88.961

Technological services
reports for companies

480
Associates

+

813
Clients

=

1293

**Companies
trust CNTA**

Our R&D capabilities

	Circular food ingredients New upcycled ingredients Isolation of bioactive compounds Encapsulation Sustainable proteins
	Food product development Smart formulations Clean label Novel foods Alternative proteins Extrusion & texturization Sensory evaluation
	Innovative preservation strategies Thermal & non-thermal treatments (UV, plasma, HPP, etc.) Antimicrobials & biopreservatives Chlorine alternatives
	Food biotechnology & fermentation Strain collection Microbiome characterisation Pre/pro/postbiotics Process optimisation Precision & biomass fermentation
	Sustainable food processes & packaging Active coatings Food contact product validation Biomass stabilisation & conditioning Post-harvest solutions
	Digital & AI tools Artificial vision (NIR, Spectral tech) Data science & AI Process modelling & simulation Process efficiency & quality
	Advanced food characterisation & 'omics' Ingredient & product functional evaluation (<i>in vitro</i> & <i>in vivo</i> platforms, e.g. <i>C. elegans</i>) Metabolomics
	Consumer studies & acceptance EU-wide surveys, in-depth interviews & focus groups Market strategy SSH Online platform (>5k consumers)

Our pilot equipment



Formulator | Autoclave | UHT lane and aseptic packaging | Microwave treatment. | Cold plasma

- Post-harvest treatments and operations
- Ready-to-eat products and cooked meals
- Manufactured meat and dairy products
- Fluid bed coater/dryer for encapsulation
- Active and smart packaging, ecodesign



Controlled atm. storage & drying rooms | Packaging and thermoforming eq.

- High-Pressure processing unit (HPP)
- Extrusion technologies (dry & HME extrusion)
- Fermentation processes (solid, liquid, precision) – from 50 ml up to 150 L bioreactors
- Sidestream valorisation (stabilisation, extraction, purification)



Dry/HME/cooking extrusion: 4x pilot extruders

- In vitro* digestibility platform
- HPLC and metabolomics platform
- ISO-compliant tasting rooms (sensory booths)
- Laboratories and whiterooms



Ultrasounds | Sidestream valorisation | 150L bioreactor



Extensive EU R&D funding expertise





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