

Development of innovative post-harvest treatments for fruits and vegetables

- Develop and validate **sustainable post-harvest treatments to reduce pest risks** (e.g., active and edible coatings* or UV-C treatment + post-harvest storage under controlled atmosphere, electrolyzed water, Radiant Energy Vacuum REV - vacuum dehydration).
- **Develop natural extracts obtained from subproducts valorization** for phytosanitary applications.
- **Encapsulation of active substances (biopesticides, for example) in bio-based matrices** (e.g., pectins isolated from citrus peels, husks and straws from cereal processing, cellulose and hemicellulose, and combinations of them, etc.). Formulations can be designed for delayed release, temperature sensitivity, varying solubility, or sequential release of active substances.

* We can work on different active compounds and evaluate different application methods (e.g., dipping, spraying, or electrospinning).

Validation, performance assessment and standardization

- Conduct **pilot-scale validation** of the treatments simulating real post-harvest and logistics conditions.
- Evaluate **impacts on food quality, safety, and shelf-life**, ensuring treatments are compatible with **EU food safety and trade regulations**.
- **Analytical tests for trace substances in the final products.**
- **Market study on European consumer perception** (surveys in different EU countries).
- Support **methods/treatments' adaptation** to existing industrial post-harvest lines to ensure practical implementation.
- Contribute to **protocol design and standardization** of the treatment procedures (dose, duration, etc.).
- Contribute to **guidelines** development to ensure repeatability, regulatory compliance, and safety.

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 (*in vitro* & *in vivo* platforms, e.g. *C. elegans*) | 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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