

Design, develop and validate innovative sustainable bio-based ingredients using biotechnology approaches + links with digital technologies and tools

- **Fermentation-based production of functional food ingredients and additives using by-products from the food industry** (e.g., precision-fermented flavor and aroma compounds, precision fermentation using fermentable bases derived from by-products of the food industry, bioactives and nutraceuticals, etc.).
- **New bioactive food ingredients for mental health** (GABA, dopamine, serotonin, neurosteroids, and neuroimmune modulators) derived from *in situ* microbial fermentation and *ex situ* precision fermentation.
- **Integration of digital technologies** - including hybrid mechanistic-AI models, Physics-Informed Neural Networks (PINNs), AI-driven process optimisation and digital twins - **to enable reliable bioprocess modelling, scenario prediction and efficient scale-up.**

Consumer perception & acceptance, and cooperation with industry

- **Consumer research and perception analysis** of bio-based innovations - combining surveys, sensory studies and focus groups - to evaluate consumer understanding of sustainability claims, perceived benefits and risks, and the factors that drive market acceptance of new bio-based products.
- Organize **co-creation workshops, focus groups and surveys** engaging consumers, producers, and policy actors to co-design bio-based solutions.
- Mobilize CNTA's **industrial network of associated companies** to test and validate new bio-based products.
- Support **communication** to enhance public trust and accelerate market uptake.

We're CNTA




NATIONAL CENTER FOR FOOD
TECHNOLOGY AND SAFETY.

*Cutting-edge
knowledge and
technology.*

Team

especiè CNTA 



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



Facilities and equipment

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

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



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



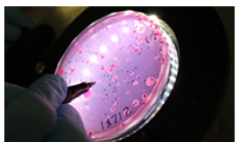
Circular food ingredients

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



- 🔬 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



- 🔬 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)



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





Extensive EU R&D funding expertise



Like a **PRO**

EPICSHIFT



wasteless

CO FRESH



model²bio



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