

**FUD** *in*®  
**INNOVATION THAT  
WINS THE MARKET**

**SERVICE PORTFOLIO**



# DO YOU NEED A STRATEGIC PARTNER TO INCREASE YOUR CHANCES OF SUCCESS IN THE DEVELOPMENT OF A NEW PRODUCT?

FUDin accompanies you through the entire innovation process: we study the market and the consumer to define an initial version of the idea, we elaborate the conceptual definition, prototyping and pre-series samples and we go back to the potential consumer to confirm and get to know in depth the niche you intend to conquer. We stay by your side in the industrial scaling and management of your intellectual property, to turn your idea into a market reality. So that your new products and processes end up in our homes, strengthening your turnover and your margins.





## TECHNOLOGY SOLUTIONS & SERVICES

Want to increase the margin of your products?

Need to reduce the costs of your processes?

Looking to reach new markets and/or customers?

Thinking of reformulating your products?

Any problems in your production process?



**SERVICES**

**MARKET AND  
CONSUMER  
KNOWLEDGE**

## WE BRING INNOVATION TO THE SURFACE - DATA-DRIVEN TRENDS

We manage **trends** and macro **data**. We have ultra-segmented the market and can define innovative products to conquer the right consumer or channel.

## WE MEASURE ITS POTENTIAL MARKET FIT

It is crucial to measure whether the innovation will have a real fit with the chosen market segment. Define its possibilities in retail, food service or B2B.

We carry out **concept tests** and **consult purchasing decision-makers** and check whether the market and its mechanisms will take up the product and **in which channel or format**.

## WE CALCULATE ITS SCALABILITY IN THE MARKET

Is your innovation **profitable**? We **size up the market options** and what turnover can be achieved depending on the chosen segments.

## WE PLAN THE MARKET LANDING STRATEGY

We decide **who, where, how and when to reach**, i.e. we plan the short-term future of the commercial development of the product (target, channels, activation budgets, advertising...).





SERVICES

**SENSORY**



**Have you ever wondered what the market thinks of your product? Do you know how you are different from the competition or how you could reach more customers? Welcome to Sens Revolution: the sensory revolution.**

We analyse all the questions that should be asked of your product, to determine a strategy.

We understand the language of the market and translate it into R&D variables.

We work with different technical tools, all of them based on UNE and ISO standards, quantitative and qualitative methodologies, face-to-face and online dynamics.

Expert panel and consumer panel.

We turn your questions into a key tool for decision-making and accompany you throughout the process of adapting your product.

# EXPERT SENSORY PANEL

**Find out which sensory R&D variables define your new product:** we validate and sensorially characterise new products to make them more impactful in the market.

**Know objectively how you are different from your competition:** compare yourself sensorially with other market samples (national and international), analyse the results and improve your sensorial strategy.

**Analyse which parameters define the sensory quality of your products:** ensure the sensory quality of your products, in order to offer the "same old" product.



# MARKET SENSORY PANEL

**We investigate the "sensory reasons" that most like your new product:** we analyse what the market thinks and what it likes (or dislikes) about new products.

**Why does the market prefer your product over others with which it shares the shelf?**

We research and adapt developments to differentiate you from your competition.

**Do your products meet the quality standards demanded by the market?**

We analyse the product quality requirements that are most in demand in the market.

**We monitor the consumer with our online panel:** our online panel 4.0 mundosabor.es allows us to interact with consumers, to get to where they are to capture their opinion and preferences.



# SENSORY TRAINING

## **Do you want to set up and validate your own tasting panel based on UNE and ISO standards?**

We train and instruct expert tasting panels as a tool for internal decision making, with objective criteria, and based on categorical scales to assess the attributes of your product.

In an increasingly competitive global market, sensory evaluation of food is used as a tool for strategic decision making on quality control and consumer preferences.

The creation of sensory analysis panels or tasting panels allows you to characterise a specific food or ensure compliance with particular requirements in order to certify a differentiated quality food production (PDO or PGI).



# EVENTS, COMMERCIAL ACTIONS AND COMMENTED TASTING SESSIONS

Product tasting is an increasingly popular activity and offers a wide range of possibilities for organising an event; an experience for the 5 senses linked to brand identification.

**Do you want to promote your product with a 100% personalised experience for the senses? We provide you with a sensory expert who will highlight the attributes of your product in a forum, event or meeting with customers.**





SERVICES

# INGREDIENTS & NEW PRODUCTS



# WINNING THE MARKET

Given the growing consumer demand for 100% personalized food, the industry faces a challenge: to adapt its offer to the demand and to do so in an efficient, competitive and profitable way.

FUDin becomes your strategic ally to ensure that your innovation conquers the market, whether you want to develop a new reference or you are looking to adapt one of your references to new trends, niches or market demands.

## NEW DEVELOPMENTS

**Do you want to surprise the consumer and conquer the market?**

FUDin helps you to analyse market trends and find the product that will win them over. We accompany you throughout the process, from conceptualisation to the final product and industrialisation; in line with trends such as healthy, functional food or pre-cooked dishes with new consumption formats.

## CLEAN LABEL

Clean, easy-to-read labels with a reduced list of ingredients, additives and allergens, something that consumers are becoming increasingly concerned and curious about.

FUDin can help you:

- ✓ to reduce the list of ingredients,
- ✓ to replace artificial ingredients with natural alternatives alternatives,
- ✓ to implement simple and clear formatting and labelling.





## IMPROVING THE NUTRITIONAL PROFILE

Do you want to optimise the nutritional profile of your products and offer a healthier alternative to the consumer, without altering their organoleptic characteristics?

Do you want to increase the amount of nutrients per calorie of your products? Consumers prioritise foods with higher **nutritional density** - make them yours!

## ENCAPSULATION (SPRAY DRYER) AND FREEZE DRYING

These technologies **allow the transformation of liquid ingredients** or process intermediates **into solid products**, allowing for better handling or increased shelf life. Encapsulation allows additional **protection of the active compound** with a wall material to prevent degradation of labile compounds, controlled release, or minimise sensory defects, for example.

## BIOPROCESSES

The centre's new bioprocess line allows the simulation of **fermentation processes in a 5-litre bioreactor** at laboratory scale. The biomasses obtained are of interest as protein ingredients, as well as obtaining metabolites and microbiological cultures of interest in the food and health sector.



**SERVICES**

**FOOD QUALITY  
& SAFETY**



## **"FOOD QUALITY AND SAFETY IS EVERYBODY'S BUSINESS"**

From the production of raw materials to the final consumer, we share a responsibility in ensuring the quality and safety of the food we consume. At FUDin we help you to prevent potential risks, guarantee the quality and safety of your products, adapt to regulatory requirements and protect the health of consumers with services tailored to your needs.



# DEFINE THE SHELF LIFE OF YOUR PRODUCT

During the shelf life of a product, the nutritional and organoleptic characteristics, as well as the hygienic-sanitary and safety criteria, must be guaranteed. For this purpose, we provide you with different tools:

**Nutritional, microbiological and physico-chemical characterisation through our analytical services.**

**Historical data or turn over:** interpreting the information you have available can give you answers.

**Predictive microbiology:** the application of mathematical models makes it possible to predict the behaviour of micro-organisms according to the factors affecting their growth.

**Accelerated studies:** accelerated studies allow you to estimate the shelf life of non-perishable foods with a shelf life of more than 6 months.

**Challenge test:** inoculate your product to find out how it would behave in the event of accidental contamination.

**Durability studies:** real-time studies that allow the evaluation of the behaviour of microbiological, physicochemical and sensory attributes in a product stored under reasonably foreseeable conditions from production to consumption.

**Secondary shelf-life studies:** and once my product is opened, how long does it keep?

**Verification of the conditions of use:** Are the recommendations for use on your label sufficient to ensure that the core temperature of the product is reached and the risk is eliminated?



## VALIDATION OF SOLUTIONS TO INCREASE FOOD SHELF LIFE:

**Process optimization:** check your heat treatments. Optimise production times.

**Natural solutions to protect against the growth of pathogens and spoilage:** apply natural solutions to increase the shelf life of your product and verify their effect.

**Optimization of packaging conditions:** changes in the type of packaging or in the packaging atmosphere can increase the shelf life of your product.

**Emerging disinfection technologies:** check your L&D process. Learn about alternative disinfection methods.



## LABELLING ASSISTANCE:

Do you know all the information you can include in your labelling?

**Nutritional labelling:** complete the analyses and information necessary for the correct labelling of your product.

**Nutrition claims:** is your product low in salt, sugar, fat...? Find out if you can include a nutrition claim.

**Claims:** can my product include a *health claim*?



**SERVICES**

**PROCESS TECHNOLOGY  
AND ENGINEERING**



**Microwave-assisted processes and extrusion are some of the technologies that are changing agri-food production. At FUDin we are working on different lines of application related to these technologies.**

## OPTIMISATION OF INDUSTRIAL PROCESSES AND OPERATIONS:

The proper management of processes and their basic operations are essential to improve the quality of the products obtained, as well as to achieve greater efficiency in production and the resources consumed.

### Heat Treatments

Determination of cooking, pasteurisation and sterilisation intensity | Lethality calculations for different micro-organisms | Heat penetration studies | Determination of cold spots in autoclaves.

### Drying of meat products

Control of the process of cooking and drying meat products.

### Freezing and cooling

Verification of conditions. Estimation of freezing and cooling times.



## EMERGING TECHNOLOGIES:

Technology is a changing thing that offers us new opportunities as it develops. At FUDin we are committed to being at the cutting edge of process technologies (ultrasound, microwaves, extrusion, etc.), with the aim of developing new food products.

### Microwave heat treatments

The main advantage of microwave technology is an improvement in the heating time of the food and it can also be used alone or in combination with other technologies, which provides great versatility when designing food processes, without forgetting the energy consumption, which is lower compared to other thermal technologies.

### Electromagnetic induction heat treatments

In the same way as microwaves, electromagnetic induction allows us to improve the heating time of food, but also to carry out HTST sterilisation treatments on packaged food, which translates into considerable improvements in terms of nutritional aspects, colour, texture, etc., of canned food. FUDin has developed a prototype of an autoclave with electromagnetic induction technology that can be a revulsive in the canned vegetable sector.



## Ultrasound

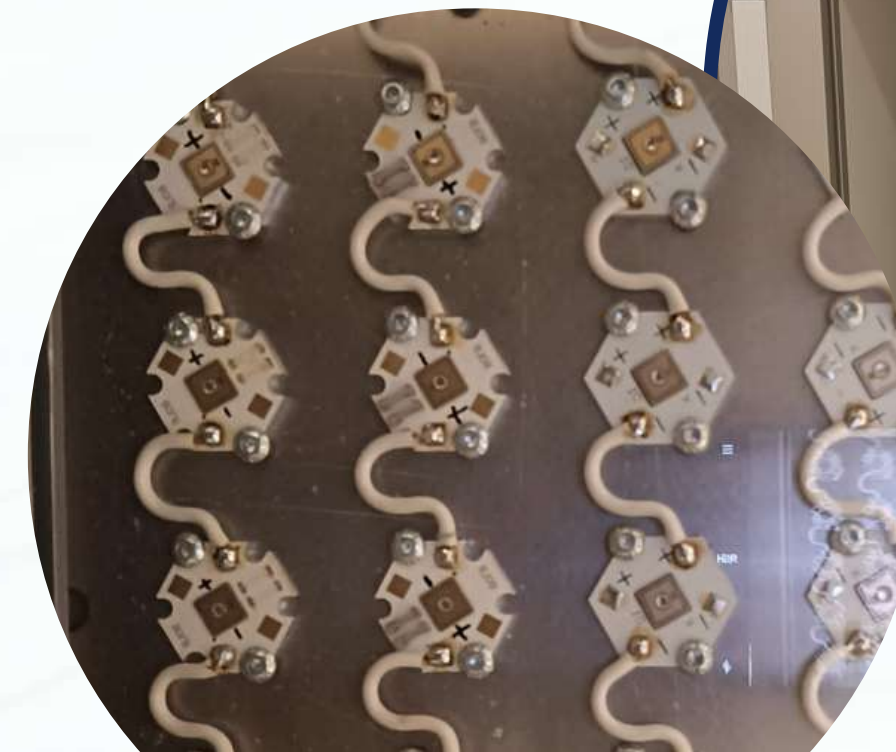
High-intensity ultrasound technology can cause physical and chemical changes in the material to which it is applied, through inaudible acoustic waves.

- Ability to improve the solubility and functionality of proteins.
- It favours the denaturation of proteins, improving their functionality and capacity to retain water, and therefore their texture and juiciness.
- Prepares proteins for subsequent texturisation, achieving greater efficiency in subsequent processes, reducing production processes and therefore production costs.



## Ultraviolet LED

- Improves the quality and functionality of proteins and biopolymers, without the use of chemical additives or high temperatures.
- Denatures and destabilises proteins, improving their solubility, hydration, and emulsification.
- It can improve enzyme activity, having a positive impact on the digestibility and assimilation of nutrients in the final product.





## FOOD EXTRUSION:

Extrusion makes it possible to modify different food ingredients in order to obtain new shapes or textures to produce completely new products. The advance in protein texturisation is leading to the appearance of a wide range of products, which opens the door to new markets in the commercialisation of foodstuffs. We have different extrusion technologies at pre-industrial level.

### Single-screw wet extrusion

Single-screw extruders that allow the shaping of a multitude of masses. High humidity products are obtained at the extruder outlet. They can be dried or subjected to gelling processes.

### Dry extrusion | twin-screw wet extrusion

Extrusion is a versatile process that combines different unit operations in a single system. Physical and chemical reactions to transform raw materials occur simultaneously due to the combined conditions of shear, heat and pressure during the extrusion process. Dry extrusion can be used in many food processing applications such as snack foods, breakfast cereals, textured vegetable protein (TVP) development, while the twin screw extruder with cooling die attached to it produces muscle fibre imitations (e.g. HMMA), etc.

### Thermal extrusion

The process is based on the transfer of mechanical and thermal energy to an emulsion to coagulate the protein and any potential carbohydrate sources. This technology allows simple formulations to be transformed into a highly textured, meat-like product.



## PROCESS MODELLING AND SIMULATION:

Mathematical modelling of processes allows us to create and simulate scenarios in order to improve the quality of the products obtained without resorting to costly production tests, which, together with the digitalisation of processes, allows for comprehensive production management.

### Process analysis and modelling

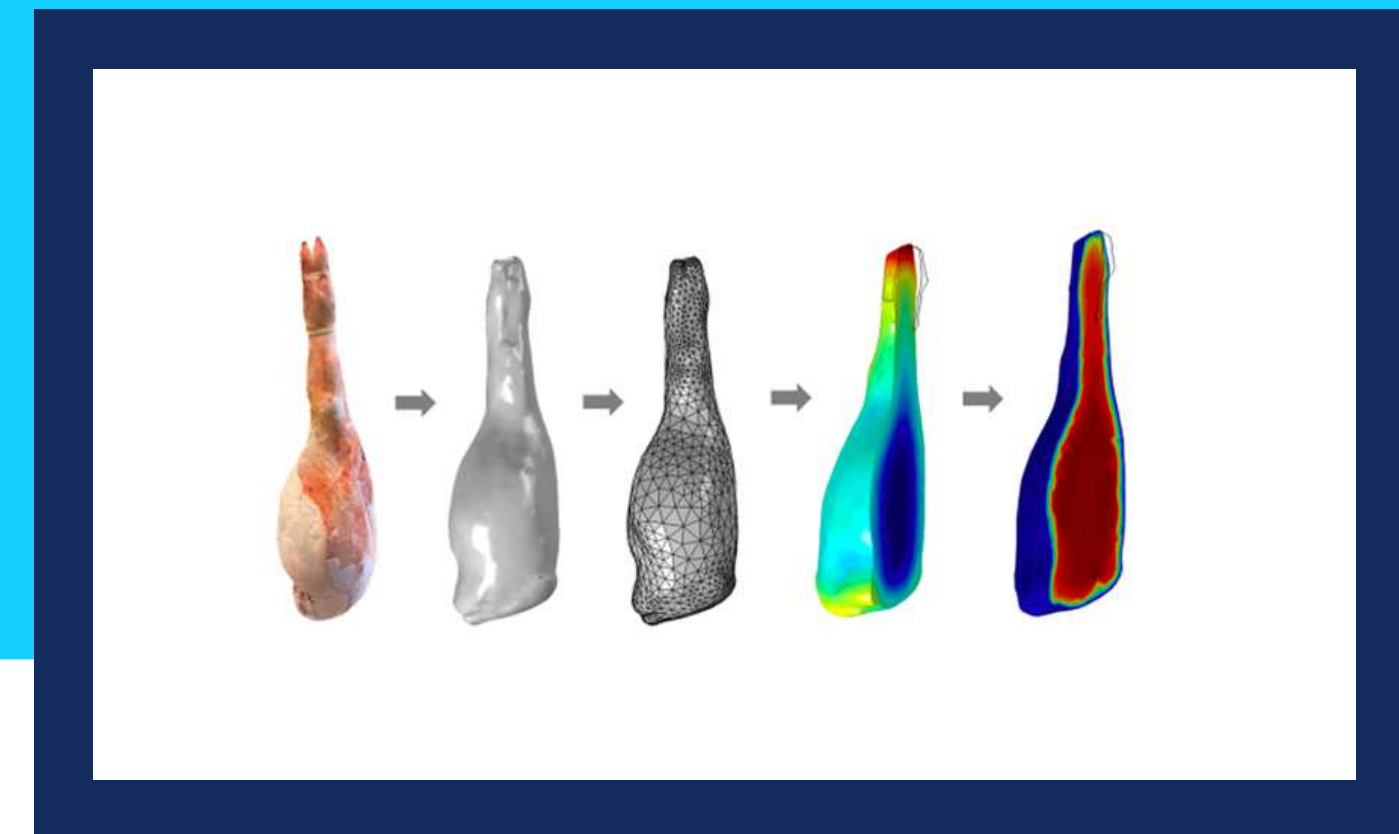
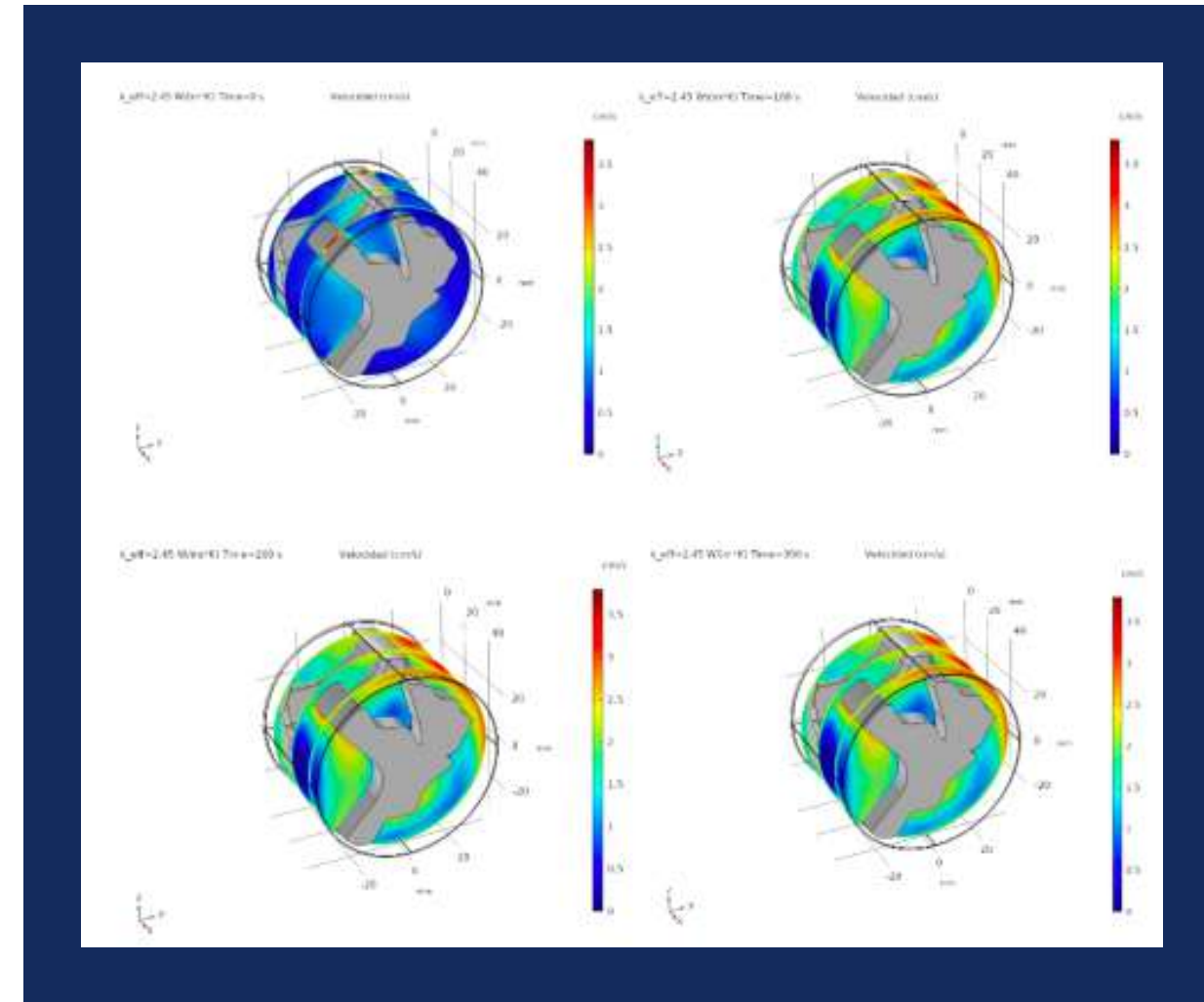
Analysis of agri-food processes with a view to their optimisation (energy, product quality, environmental, economic, production, etc.).

### Calculations and simulation of basic operations

The design and calculation of the different basic operations of food processes allows us to establish controlled working conditions and to implement energy improvements.

### Food reaction kinetics

Knowledge of food degradation kinetics allows us to predict the evolution of food during its shelf life.





**SERVICES**

**PACKAGING AND  
PRESERVATION**

Food packaging has undergone major transformations according to current needs and consumption habits. Due to climate change and other global environmental issues, food packaging requires a drastic change to close a circular life cycle. The solution is not easy, especially considering the amount of food waste that exists in the world today, but FUDin can accompany you towards responsible food packaging, which helps to improve the quality and shelf life of food within a circular economy.



**Adaptation of new food packaging materials to the new EU policies (bio-based, compostable, biodegradable and recyclable materials):** we accompany companies in the transition to the circular economy by helping them to respond to the new European legislation on food packaging in all formats. Analysis of commercial solutions. Optimisation of industrial processing. Shelf-life validation at pilot and industrial scale.

**Asesoramiento sobre regulación en materiales en contacto con alimentos:** we study and verify that the materials used in food packaging comply with the existing regulatory landscape, EU directives and regulations and specific national laws.

**Optimising packaging and increasing shelf life:** given our extensive experience in packaging foods with different needs, the shelf life and quality of products can be improved, among other actions, by searching for more viable materials, the use of modified atmospheres, and active or intelligent packaging.

**Minimum processing and modified atmosphere packaging:** Modified Atmosphere Packaging (MAP) involves packaging a food product by changing the surrounding atmosphere in order to control enzymatic and biochemical reactions and microbial evolution, while physically protecting the product. It is a process that uses natural components of the air and therefore usually reduces the amount of chemical additives in the products.

**Post-harvest treatments and optimisation of storage conditions for fruit and vegetables:** at FUDin we work on the application of post-harvest treatments (UV-C, electrolysed water, edible coatings, etc.) to improve the quality and shelf life of minimally processed fruit and vegetables and we also have ripening and preservation chambers in a controlled atmosphere to research and select the optimum storage conditions for each foodstuff.





**SERVICES**

**OTHER  
SERVICES**

# FINANCIAL SERVICES

FUDin not only offers a wide range of technological services, but also helps companies to plan their innovation strategy and raise funding for their projects.

## INVESTMENT MANAGEMENT

We find the best financing for your investments.

## TAX DEDUCTION LINKED TO R&D&I

Save up to 42% of your R&D&I investment by reducing your corporate tax payments.

# ANALYTICAL SERVICES



## Nutritional and compositional analysis

The nutritional aspects of the food we eat are of great interest to everyone, especially at a time when everything to do with food is extremely topical. Furthermore, the European Regulation 1169/2011 on the provision of food information to consumers stipulates the obligation to guarantee this information to the consumer.

Nutritional analysis is therefore a necessary tool to ensure that companies in the food sector comply with nutrition labelling regulations and with the specifications of large-scale distribution. On the other hand, knowing this information first hand and having it updated is essential to comply with quality systems and the development of new products.

We analyse the nutritional composition of a food in terms of its protein, fat, carbohydrate, sugar, dietary fibre, energy value, fatty acid profile, sodium (salt) content, etc.



## Microbiological food control, environmental monitoring and surface analysis

We have a microbiology laboratory that allows us to monitor the analytical control plan established by the risk assessment and current legislation of each food company.

We have the VIDAS method (ELFA) for the detection of the most relevant pathogens in the food industry, such as *Salmonella* spp, *Listeria monocytogenes*, *E. coli* O157:H7, *Campylobacter* spp, etc.

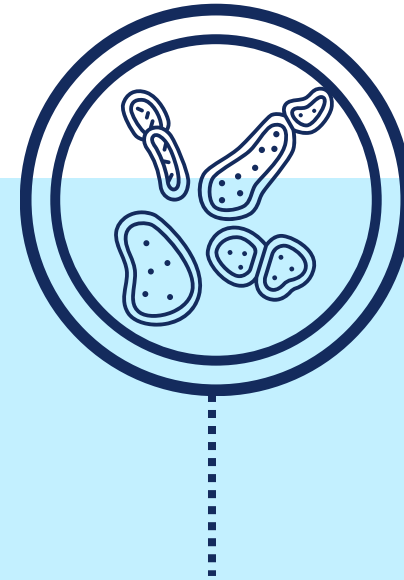
These technologies allow us to detect pathogens with high specificity in a short period of time, minimising the release time of your product batches.

# ANALYTICAL SERVICES



## Stability studies of canned food

Commercial sterility is the bacteriological condition of a heat-treated food that is free of pathogenic and toxin-producing germs, as well as those micro-organisms that spoil the product, capable of growing in the food under storage and distribution conditions. Today, the food industry requires processes to ensure commercial sterility and to determine the desired product quality.



## Validation of the antimicrobial effect of products and materials

Surfaces that come into contact with food, both in the food industry and in households, are one of the main routes of contamination, as they are colonised by pathogenic micro-organisms capable of forming biofilms, becoming reservoirs that may be involved in cross-contamination.

Determine the antimicrobial capacity of the additive/active ingredient individually or integrated in a formulation (paints, varnishes, coatings...) or a material (plastic, textile, mortar...) by means of different methodologies and standards against microorganisms of interest.

For the determination of this antimicrobial and fungicidal capacity, the specifications of both the Japanese industrial standard JIS Z 2801 and ISO 22196:2011 and the UNE-EN 15457:2014 standard have been complied with.



## Oxidative stability studies

The Rancimat is a method for measuring the oxidative stability of oils and fats under accelerated conditions, based on the induction of oxidation of the sample by exposure to high temperatures and air flow. In this way, it is possible to estimate the induction time or oxidative stability time, this being the moment from which the sample has exceeded the time in which it remains stable, and is therefore indicative of a loss of quality and useful life of the sample.

These studies allow us to carry out comparative studies of oxidative stability between different matrices, to optimise the type and concentration of antioxidants used in the stability of oils and fats, as well as to evaluate their effectiveness in different conditions, etc.



# RESULTS TRANSFER AND EXPLOITATION

We put at your disposal all our technological capacity generated over more than 20 years of experience by a multidisciplinary team of 50 people.

We adapt to your needs by transferring our knowledge through technology service contracts, product or process licensing, or other more flexible or stable formulas such as Planned Technical Assistance or the generation of strategic or commercial alliances.

We accompany you throughout the process until you successfully exploit the results commercially.

**Intellectual property rights:** we accompany you in the management of intellectual property, because your ideas belong to you and must be protected.



# STRATEGIC INNOVATION CONSULTANCY

You will never again walk alone in the challenge of innovation. We take care of managing your innovation with a 360-degree vision, so that your new products and processes are a success, strengthening your turnover and, above all, your margins. To do so, we create a long-term, **continuous support plan**, establishing **clear and measurable objectives**.

How are you managing your innovation now? What **product portfolio** do you have? Why those products? Why in those **channels**? Are you managing to **finance** your innovation adequately? What financial **resources** would you need? What **support** do you have? How do you see yourself in relation to your **competitors**?

Our knowledge can help you **make more informed decisions, drive your company's growth and face challenges with confidence**.

## 01

**Business strategy:** we plan your **innovation** strategy in the short and long term and find ways to **finance** it.

## 02

**Market knowledge:** market realities and **consumer** preferences are only known to those who work intensively and constantly developing and launching products.

## AND IF YOU NEED IT...

With our **technical expertise** we will be able to assist you in your new product development strategy, whether your company has the resources to do so or you wish to rely on our technical team through a **Planned Technical Assistance** model.

# PLANNED TECHNICAL ASSISTANCE

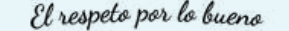
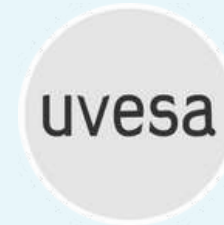
Do you need specialised **technical support on a scheduled basis and in advance**? If your technical needs go beyond a one-off service, we offer you our long-term model of Planned Technical Assistance.

PTA is planned in advance and structured in a systematic way to address specific needs.



- **Pre-planning:** before technical assistance is provided, detailed planning is undertaken that identifies the **needs, objectives, resources** required and **timeline**. This ensures that support is effectively tailored to your particular circumstances and challenges.
- **Specialised approach:** assignment of highly specialised technical experts to ensure that assistance is of high quality and relevant to each case.
- **Evaluation and measurement:** indicators and metrics are established to assess the progress and impact of assistance. This continuous monitoring helps determine whether set objectives are being achieved and allows for **adjustments and improvements** over time.

# THEY TRUST US:



# FUDin®

If you think we can help you and you want to know all the details, contact us and we will walk with you.

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