

R&D SERVICES

Science-based solutions for
food and beverage research
and development



Let us inspire, deliver
and accelerate your
product innovation



WHO WE ARE

RSSL's mission is to "Enhance lives through science". It drives our organisation to achieve excellence and further enhance our reputation as a highly respected Contract Research Organisation (CRO) to the global food and consumer goods industry.

Collaborating with businesses from start-ups to multinationals, our team of multi-disciplinary scientists help companies scope, develop and manufacture products that are safe, innovative and of the highest quality. It requires dedication, agility, and commitment, which is why we continue to invest in every area of our business.

RSSL is home to an exceptional team of talented scientists, product developers, chefs, and regulatory experts. Many are experts in their chosen field. This allows us to draw on a deep pool of knowledge. People who work well with each other, and you, the client, to achieve the best possible results.

Established:
1987



Members
of staff:
c330



Scientific
disciplines:
**Food science,
nutrition,
chemistry,
biochemistry,
molecular biology
and physical
sciences**



Global reach:
> 50 countries



Accredited:
ISO 17025

WHAT WE DO

In the highly competitive food and drink industry, speed to market and product differentiation can be key. RSSL understands these challenges and provides a comprehensive package of R&D services designed to guide you through the complete product development process; from concept ideation to launch.

With our proven product development experience, allied to analytical capabilities, consultancy expertise and specialist knowledge, we can support your brand and help grow your business.

So, whether you need short project-based support or fundamental research, RSSL will work in partnership with you to arrive at a consumer-winning solution.

“Our collaborative approach enables us to support a project throughout its life cycle; from product concept to pilot plant and full-scale manufacture.”





HOW CAN WE HELP?

RSSL's expert R&D services include:

- Concept rapid prototyping and product development
- Flavour, physical & structural characterisation
- Ingredient development and analysis
- Analytical method development and validation
- Stability studies
- Claim substantiation services
- Post launch food safety support
- Consultancy support

Take a closer look to discover how our services can help you improve your product development process, gain a competitive edge and strengthen your operation.

Research & Development

Ingredient Development

Analytical Capabilities

Post Launch Services

Meet Our Technical Experts



YOUR TRUSTED PARTNER

Creating a successful food or beverage product is a journey. That's why we provide dedicated R&D support that is designed to help you meet your goals and milestones.

You can choose to work with us at every stage - from concept to launch - or benefit from our expert guidance on a particularly challenging area. Our service is flexible, collaborative and tailored to your specific needs.

We also know this is often a high-pressure environment, which is why our responsive team has the ability to turn around projects quickly and efficiently - helping you get your product to market faster.

Concept Ideation

Research

Development

Testing Services

Commercialisation





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CONCEPT IDEATION

Good products start with good ideas - but bringing them to life can be a challenge. Our expert team helps to facilitate this process by identifying innovative and strategic opportunities for your portfolio.

We bring a unique perspective to the mix and push ourselves to think differently. By drawing on the latest consumer trends, market insights and our deep ingredient and formulation knowledge - together with our practical culinary skills - RSSL not only inspires new product concepts but translates them into a commercially viable reality.

Can you bring
my idea to life
and develop this
product so I can
launch quickly?





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RESEARCH

We carry out appropriate research to assess the feasibility of a concept, as well as in-depth scientific groundwork for your product launch.

Our experienced team will work with you to:

- ✓ Assess the market to ensure the concept is on-trend
- ✓ Define the target audience and ensure the concept meets their needs
- ✓ Ensure any desired claim is achievable
- ✓ Use fundamental science to assess the product functionality

“Whatever the scale, scope or timeframe of the project, we add value through creative thinking and tangible results.”





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PRODUCT EXPERIENCE

Confectionery

Chewing Gum
Boiled Candies
Jellies
Caramel



Dairy

Milkshakes
Yoghurts
Deserts
Ice Cream



Savoury

Sauces
Spreads
Soups



Beverages

Soft & Alcoholic
Hot & Cold Powdered
Energy and Sports
Smoothies



Bakery

Biscuits
Cereal Bars
Cakes
Snacks



Special Diets

Baby Foods
Meal Replacements
Free From
Vegan Products



INGREDIENT EXPERTISE

Sweeteners

- High Potency - Natural and Synthetic
- Bulk Sweeteners - Sugar Reduction and Replacement
- Sweetener Profile - Enhance and Modify Sweeteners

Functional Ingredients

- Stabiliser and Hydrocolloid Systems
- Taste Optimisation - Flavour and Bitterness Masking
- Fat Replacers
- Protein - Evaluation of Novel Sources, Development of High Protein Products
- Fibres - High Fibre Products, Sugar Replacement





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DEVELOPMENT

Translating a concept into a launch-ready product demands in-depth knowledge of numerous critical factors, from ingredient analysis and microstructure to regulatory compliance. RSSL provides that expertise.

Working in partnership with you, our talented food technologists optimise every aspect of a product's journey to maximise its appeal and ensure technical feasibility.

We can navigate the complexities of taste profiles thanks to our expertise in sweeteners and bitterness masking methods, while our understanding of mouthfeel and texture ensures a positive all-round eating experience. Sensory and consumer insight studies can also be managed as part of your project.

RSSL's dedicated development kitchen, as well as access to third party pilot plant facilities to run scale-up trials, further strengthens our capabilities. It provides a comprehensive approach, which ensures formulations are viable and transferable to a full-scale manufacturing operation.

By combining creativity with specialist technical skills and practical application, we deliver results that help you achieve a successful outcome.

Benefit from our detailed development services:

- ✓ Ingredient sourcing
- ✓ Recipe development
- ✓ Taste optimisation
- ✓ Packaging sourcing
- ✓ Recipe costings
- ✓ Nutritional calculations
- ✓ Regulation adherence
- ✓ Label generation support
- ✓ Scale up trials
- ✓ Factory trial management





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ANALYTICAL TESTING SERVICES

There are many reasons for carrying out analytical testing on a product as part of the development process. You may want to quantify individual ingredients, verify label claims, understand ingredient stability, or understand how specific processing conditions will impact the overall taste and product performance.

We can undertake the appropriate ingredient or product testing to give you the information you need to optimise your product and take it forward. The approach we adopt is tailored to your requirements and the questions you are trying to answer.

“Our deep multidisciplinary expertise, agile approach and scientific excellence accelerates your product innovation”



INGREDIENT TESTING AND CLAIM SUBSTANTIATION

Understanding the level of specific ingredients in your final product, pre and post-processing, is often required during the R&D process. In addition, if a label claim is going to be made on pack then analytical data is used to substantiate these claims. The specific analytical method required depends upon the ingredient of concern. Using our extensive range of methods and techniques, or through the development of new analytical methods, we can support with both of these aspects.

Ingredients analysis assists with quantification of specific ingredients such as:

- Sweeteners
- Acids
- Preservatives
- Functional ingredients / nutraceuticals
- Speciality oils

Claim substantiation verifies product claims including:

- Ingredient content
- Free-from
- Vitamins and minerals
- Functional foods
- Natural products





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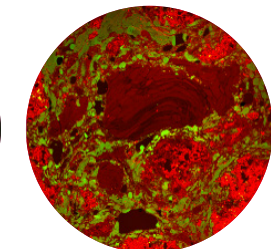
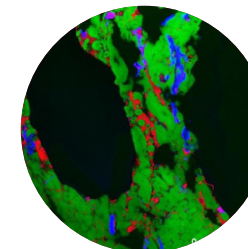
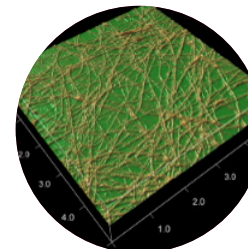
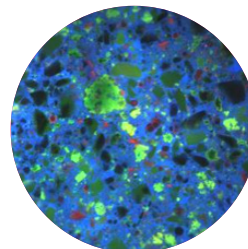
How can the **formulation** be improved to create the smooth, indulgent mouthfeel consumers love?



MICROSTRUCTURE AND PHYSICAL CHARACTERISATION

A detailed understanding of ingredient and product functionality aids product development and performance. With the benefit of our wide-ranging expertise, you can:

- Understand the size, shape, surface, mixing-efficiency and aggregation of different ingredients and how they change during manufacturing to impact the final product characteristics
- Explore the internal structure of a product and the effect of process conditions to help optimise consumer experience and improve product shelf-life
- Product benchmark and reverse-engineer through competitor analysis and deconstruction
- Quantify a product's physical parameters, such as viscosity; to optimise specifications and manufacturing controls
- Quantify the physical properties needed to troubleshoot processing issues and define the requirements for equipment such as pumps and chillers
- Measure parameters that relate to the texture and physical stability of products





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AROMA AND TASTE CHARACTERISATION

A thorough understanding of what gives your product its unique aroma and taste is key to optimise flavour perception, the process and resolving any related issues. We profile the volatile and (partly) non-volatile compounds in your product and provide identification and quantification of key flavour compounds. In this way, we can play a pivotal role in your food innovation journey.

We provide an understanding of:

- The impact of ingredients, recipes and processing on the desired flavour characteristics of products
- The consumer experience of flavour release under conditions that mimic real life usage
- Different flavour profiles during competitor assessments
- IP claims to protect competitive advantage

How can you
**boost nutritional
profile**, without
impacting taste?





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SPECIALIST OILS & FATS, PROTEIN AND CARBOHYDRATE EXPERTISE

Oils, fats, protein, and carbohydrates are key components of all foods and can impact processing, taste, aroma, texture and shelf life. Our wide-ranging analytical expertise assists with your understanding of these ingredients.

Specialist oils, fats and lipids characterisation testing allows you to:

- Understand behaviour and interaction of oils, fats & lipids and their impact on processing and product performance
- Optimise the use of oils, fats and blends to provide desired properties and functionality in products e.g. nutritional, taste, texture, stability
- Determine the nutritional contribution of oil & fats and levels of fortified lipid ingredients, e.g. saturates, polyunsaturates, omega 3, sterols
- Evaluate the stability of oils, fats & lipids in raw materials and finished products to assist with ingredient or formulation selection and ensure desired shelf is achieved
- Assess the quality and authenticity of ingredients to ensure value and cost optimisation in selection of ingredient suppliers

Specialist protein and carbohydrate analysis, helps you to:

- Understand the profile and quantify ingredients to predict their performance in finished products and impact on nutritional profiles
- Understand the effect on generation of undesired components
- Quantify the levels of ingredient present and understand changes on shelf-life



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COMMERCIALISATION

Taking a product from pilot plant to commercial manufacture can present a number of challenges. Quality and consistency are essential, as is the need to ensure defined product characteristics, functionality and performance are all maintained.

We can support you through this critical stage with scale-up trials, either at your chosen manufacturing site or appropriate facilities sourced by us on your behalf.

You may also want to take advantage of our post-trial optimisation services to assess specific aspects of your product's performance - particularly shelf-life.

For the most authentic and relevant results, shelf-life testing is carried out on products in their final packaging to assess a range of characteristics including:

- ✓ Aroma and flavour characterisation
- ✓ Appearance
- ✓ Texture and mouthfeel
- ✓ Aftertaste
- ✓ Microbiological stability
- ✓ Lipid oxidation stability
- ✓ Nutritional content
- ✓ Specific ingredient stability



Our ability to successfully balance consumer and commercial demands is why our food clients come back to us, time and again.



INGREDIENT DEVELOPMENT

The food industry is constantly moving forward, as the needs of the consumer for healthier products and variation in choice expand. This means ingredient suppliers need to be equally agile. This is where RSSL's ingredients expertise can prove an invaluable asset.

Our deep ingredient knowledge allows you to fully understand the functionality and performance of your ingredient in different product matrices. Armed with these technical insights, you can confidently identify new opportunities, applications and markets, and grow your business.

We assist with:

- ✓ Fundamental research to fully understand your ingredient's characteristics and ensure it is being used to its full potential
- ✓ Product application development to showcase your ingredients in targeted formulations
- ✓ Optimisation of concepts and preparation of delicious samples for customer sales events
- ✓ Competitor benchmarking to assess your ingredient against others and compare performance
- ✓ Analytical method development and validation to ensure quantification of ingredients





What data is needed to support a **regulatory submission** or an on-pack claim?



REGULATORY SUBMISSIONS AND NOVEL FOODS

When bringing new ingredients to market, getting to grips with constantly shifting regulatory requirements is a significant challenge. RSSL's multidisciplinary team has the specialist knowledge to interpret complex dossier requirements and carry out the required analysis to support your regulatory submissions.

Our services include:

- ✓ Review of ingredient status to identify what data is required for the submission
- ✓ Evaluation of ingredients in relevant model food systems
- ✓ Analytical methods developed and validated for specific chemical entities
- ✓ Shelf-life studies to demonstrate the stability of the ingredient itself, as well as in finished products
- ✓ Unique internal process to allow the informal sensory evaluation of non-EU/non-UK approved ingredients
- ✓ Assessment of particle size for nano-material characterisation



ANALYTICAL CAPABILITIES

With our comprehensive suite of analytical techniques, RSSI can support every aspect of your R&D programme. With extensive expertise in developing and validating analytical methods, we provide robust and reliable data that you can trust.

Techniques available on-site include:

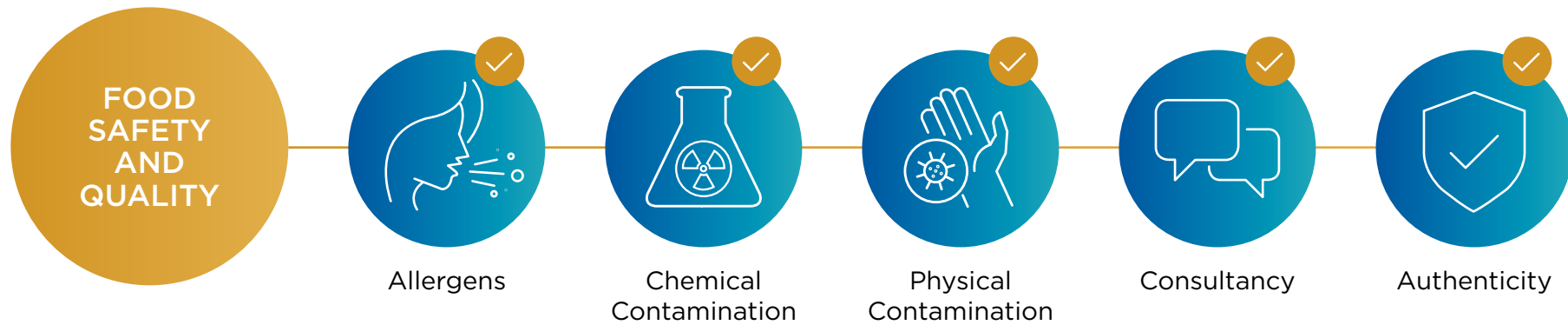
- ✓ Chromatography techniques: HPLC, GC, UPLC, IC, GPC/SEC
- ✓ Mass spectrometry: GC-MS, LC-MS, LC-TOF, ICP-MS, PTR-MS, GC-GC-TOF
- ✓ Elemental analysis: AAS, ICP-OES, XRF
- ✓ Spectroscopy: NMR, FT-IR, NIR, UV/Vis, and Colour (both reflectance and transmittance)
- ✓ Microscopy: SEM, LM, Confocal scanning laser microscopy, X-ray tomography, Confocal Raman microscopy
- ✓ Image Analysis
- ✓ Physical sciences: DSC, PSD, Rheometers, TGA, DVS, Texture analysers, Zetasizer, XRPD
- ✓ Biochemistry: ELISA, PCR, Whole genome sequencing/NGS, SDS-PAGE, CE





POST-LAUNCH SERVICES

Our support doesn't end once your product has successfully been brought to market. Our expertise extends to a range of food safety and quality services. Having stringent methods in place to protect the consumer and your brand reputation has never been so important.





24/7 EMERGENCY RESPONSE SERVICE

Membership of our Emergency Response Service gives you access to our technical experts 24 hours day, 365 days a year. So, in the event of an unexpected development, you can be sure of an immediate and effective response. Providing you with rapid and reliable results to inform your decisions.



SAFETY & QUALITY

Even with the best manufacturing practices in place, a crisis can still hit. Faced with a potential contamination issue or product recall, you need answers to important questions quickly. Only then can you take the necessary action to address and resolve the situation with minimal disruption to your business.

We can provide analytical and testing support for a range of manufacturing safety and quality issues including:

Allergens: Cleaning validation and product testing

Chemical contaminant identification: Taints/off flavours, heavy metals and chemical contaminant screening

Physical contaminant identification: Foreign body and metals identification, NMR screening

Consultancy: Training, risk assessments, allergens and food safety

Product authenticity: Fats & oils, vegan/vegetarian products, meat/fish speciation and counterfeiting



MEET OUR TECHNICAL EXPERTS

In an industry driven by innovation, having access to experts who can provide answers to technical, commercial and regulatory questions is essential. At RSSL, we bring together some of the industry's most respected figures to deliver this specialist guidance.



MARK AUTY
MICROSTRUCTURE

Internationally recognised food microstructure expert across multiple product categories. Published over 100 scientific papers. Fellow of the Institute for Food Science & Technology and the Royal Microscopical Society.



NIGEL BALDWIN
INGREDIENT REGULATORY

Nigel has worked on more than 50 food ingredient approvals globally, advised on multiple "start-to-finish" new product introductions and well-known for his work in novel foods, food additives, enzymes and infant formula ingredients.



CAROLE BINGLEY
PRODUCT DEVELOPMENT

Extensive experience of product development and ingredient evaluation across numerous food categories including plant proteins, vegan meat and dairy alternatives, sweeteners and bulking agents. Fellow of the Institute for Food Science & Technology.



FRED GATES
TEXTURE & PHYSICAL PROPERTIES

Extensive experience in food research with particular focus on physical properties and the impact of food processing on product characteristics.



ROBERT GRIFFITHS
LIPIDS

Extensive experience in the analysis, uses and properties of Oils, Fats & Lipids in a variety of food and non-food applications. Current Chairman of the British Standards Institution (BSI) Oilseeds, Fats & Oils Committee. Member of the Society of Chemical Industry Lipids Committee.



BARBARA HIRST
ALLERGENS

An allergen management specialist, with broad analytical and technical expertise gained over 20 years in the food industry. Actively involved with industry, clinical and regulatory bodies, as well as patient support groups.



DANIELE LEONARDUZZI
PHYSICAL PROPERTIES

Material Scientist with many years' experience in a broad range of industries, linking physical attributes to key process and quality parameters in order to facilitate scale-up and speed up product launches.



DAVID NEVILLE
CARBOHYDRATES & PROTEINS

Deep expertise in the analytical determination of carbohydrates and proteins for food applications and novel foods submissions.



ELLEN NORMAN
INGREDIENT & PRODUCT CHEMISTRY

Wide range of chemical analysis experience, with a specialist interest in linking analysis to the process and product. Fellow of the Royal Society of Chemistry and Chair of the Food and Drink Federation residues and contaminants committee.



PAUL O'NION
FLAVOUR

Experienced chromatographer specialising in flavour and taints analysis using multi-dimensional chromatography, mass spectrometry and troubleshooting. Elected member of Analytical Division and Analytical Chemistry Trust Fund.



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product innovation.

For more information,
please visit www.rssl.com

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