



# SHIMADZU FOOD SUMMIT 2024 | ASIA EDITION

Safeguarding A Sustainable Future For All





# Safeguarding A Sustainable Future For All

Asia has become the largest region in the global food market, setting the stage for a remarkable transformation. By 2030, consumer spending on food is projected to surge by an additional US\$4.4 trillion\*, driven by massive demographic shifts and an increasing demand for premium quality.

With its population currently exceeding 4.5 billion and projected to increase by another 250 million by 2030\*, Asia is set to drive greater demand while becoming more discerning in its food preferences. Particularly, India and Southeast Asia are likely to experience the most robust consumer-driven growth in food spending.

**Asia is set to experience a seismic shift in food trends over the next decade. The time in Asia is now.**



Today, safe, functional, and quality food is no longer merely a requirement; it is an expectation. As we harness the opportunities within this expanding market, we must also adeptly navigate its challenges. This includes increasingly stringent regulations that demand compliance, the complexity of diverse food matrices containing novel ingredients, higher expectations for superior food quality, burgeoning demand for health-promoting superfoods catering to an aging demographic, as well as sustainable consumption.

Shimadzu stands ready to meet these challenges with its innovative solutions. Leveraging AI-driven technology, our advanced instruments utilize Machine-to-Machine (M2M) communication, Internet of Things (IoT), and Artificial Intelligence (AI) to enhance workflow efficiency. Powered by Living Laboratory, Shimadzu offers Total Solutions for food analysis to fully capitalize on the immense opportunities in Asia.

Join us at the Shimadzu Food Summit 2024 | Asia Edition as we delve into innovative possibilities.

\*Source: Asia Food Challenge Report by PwC, Rabobank, and Temasek

# 23 October 2024, Wednesday

\*Schedule is accurate at time of printing

📍 Four Seasons Hotel, Singapore

**10:00 – 10:10** **Welcome Address**  
*Dave Chua, Executive Officer & Senior General Manager, Shimadzu (Asia Pacific)*

**10:10 – 10:40** **Keynote Address: AOAC SEA Roles And Activities**  
*Dr Xinping Hou, President, AOAC SEA*

## Food Safety

**10:40 – 11:00** **Evolving Regulatory Requirements For PFAS Analysis And Novel Approaches**  
*Dr Jagadeesh Kodali, Vice President - Food Division, Vimta Labs Ltd*

**11:00 – 11:20** **Advanced Analytical Techniques And Emerging Trends In Food Safety And Quality Testing**  
*Dr Tran Dang Ninh, Director, Reference Testing and Agrifood Quality Consultancy Center (RETAQ)*

**11:20 – 11:40** **Ethylene Oxide And 2-CE Analysis And India Food Safety Market Direction**  
*Dr Priti Amritkar, Director, Envirocare Labs Pvt Ltd*

**11:40 – 12:00** **Mineral Oil Contamination In Edible Oils**  
*Prof Chin-Ping Tan, Professor, Universiti Putra Malaysia*

**12:00 – 12:20** **Launch Of New Technologies**

**12:20 – 13:50** **Group Photo Session & Lunch**

## Food Quality

**13:50 – 14:10** **Aroma Analysis Technology Supporting Sustainable Deliciousness In Food**  
*Takehito Sagawa, Senior Specialist, S&B Foods Inc*

**14:10 – 14:30** **Halal Market And Testing In Indonesia**  
*Heryani, Laboratory General Manager, LPPOM MUI*

**14:30 – 14:50** **Philippines Roadmap To Functional Food**  
*Dr Armando Guidote, Director, Philippine Institute of Pure and Applied Chemistry (PIPAC)*

## Food Innovation

14:50 – 15:10 Shimadzu World Lab Network: Food Sustainability MoU Signing

15:10 – 15:30 **Untapped Solutions For Food Safety And Quality**  
*Sandy Nargund, General Manager, Shimadzu (Asia Pacific)*

15:30 – 15:50 **Experience Innovation With Shimadzu Living Laboratory**  
*Sateesh Tummala, Deputy General Manager, Shimadzu (Asia Pacific)*

15:50 – 16:30 **Shimadzu End-To-End Food Solutions Powered By Living Laboratory**  
*Experience Zones: (1) Food Safety (2) Food Quality*

16:30 – 17:00 **Vote Of Thanks**  
*Prem Anand, Managing Director, Shimadzu (Asia Pacific)*

📍 Empress @ Asian Civilisations Museum, Singapore

18:00 – 20:45 **Networking Dinner**

## 24 October 2024, Thursday

📍 Shimadzu (Asia Pacific) Office, Singapore

09:00 – 12:00 *Group 1: Cambodia, Indonesia, Japan, Malaysia, Philippines, Thailand & Vietnam*  
Lab Tour + Workshop: Total Solutions For Residual Pesticides & PFAS

13:30 – 16:30 *Group 2: India & Singapore*  
Lab Tour + Workshop: Total Solutions For Residual Pesticides & PFAS

# Exordium

Welcome to the Shimadzu Food Summit 2024 – the first-ever Asia edition of our flagship event.

For the past 13 years, Shimadzu Global Food Summit has been at the forefront of exploring and understanding the latest food trends worldwide. As we enter the Asian Century, it is fitting that we direct our focus towards Asia.

According to the Asia Food Challenge report by PwC, Rabobank, and Temasek, Asia is on track to require US\$1.55 trillion in investment over the next decade to meet rising consumer demands for healthier and sustainable food, underscoring the importance of this Summit.

Under the theme “Safeguarding A Sustainable Future For All”, this Summit will address pressing issues such as PFAS contamination and the Ethylene Oxide food incident. We will also explore the future of food, focusing on innovations like functional foods and aroma analysis that support the concept of sustainable deliciousness. Our overarching aim is to foster a collaborative approach towards securing a sustainable future, while safeguarding food quality and safety.

Today, we are excited to welcome over 130 of you to this Summit, which offers an action-packed agenda featuring a remarkable lineup of speakers, each renowned for their expertise. Our experience zones will showcase Shimadzu end-to-end food solutions powered by Living Laboratory, designed to meet your analysis needs with ease.

To support you further, we encourage all to be part of Shimadzu World Lab Network, which underscores our commitment to not only discuss but also actively collaborate and drive impactful change. This initiative embodies our dedication to forging a global network that connects all Shimadzu collaborative laboratories, leveraging one another's expertise and resources to drive global innovations.

We hope you find this Summit an unforgettable experience as you connect, learn, and engage in dynamic conversations that will shape the future of food in the Asia Pacific and beyond.

Thank you for being part of this transformative event.

## Prem Anand

*Managing Director  
Shimadzu (Asia Pacific)  
Singapore*



# Welcome Address

It is a great pleasure to be here with all of you as we unite with key opinion leaders, industry experts, and seasoned professionals from across the food industry towards our shared mission: Safeguarding A Sustainable Future For All.

In the face of escalating challenges such as PFAS contamination, microplastics, and mineral oils infiltrating our food supply, the urgency to protect what we eat has never been clearer. These challenges emphasize the necessity for rigorous quality control and agility in responding to food safety incidents.

As for food quality, it remains a top priority, especially in combating food fraud. As highlighted by the Food and Agriculture Organization of the United Nations, the risk of food fraud

in Asia Pacific is high, which may pose health risks and serious challenges for individuals following specific religious dietary restrictions. Therefore, ensuring food authenticity, including Halal integrity, is crucial.

Looking ahead, the future of food is ripe with opportunity. Innovations in functional foods and health-enhancing products are opening up new avenues in the industry. Integrating safety, quality, and innovation is hence essential to achieving food security and a sustainable future.

At Shimadzu, we offer end-to-end solutions to safeguard the future of food. Our cutting-edge technologies, as you will see at this Summit, include Ultra-Fast Mass Spectrometry (UFMS™), Analytical Intelligence™, and Living Laboratory. These are the pillars of our Total Solutions, enabling robust, accurate, and intelligent analysis that meets the needs of modern laboratories.

Beyond our analytical capabilities, it is also about tapping into our World Lab Network, turning connections into collaborations to drive advancements and breakthroughs.

As this highly anticipated Summit unfolds today, we warmly invite all of you to join us in further collaborations as we work together towards Food Sustainability.

Thank you very much.



**Dave Chua**

*Executive Officer &  
Senior General Manager  
Shimadzu (Asia Pacific)  
Singapore*

# Keynote Address: Standard Development For Food Analysis



**Dr Xinping Hou**

*President  
AOAC SEA  
Singapore*

## AOAC SEA Roles And Activities

Dr Xinping Hou currently serves as the President of the Southeast Asia Section of AOAC International (AOAC SEA). She is also the Analytical Services Manager at BV-AQ Singapore (formerly AsureQuality Singapore), offering technical consultation and developing strategies to support innovation, process improvement, and product quality control across various industries.

Since 2016, Dr Hou has been an esteemed member of AOAC International and has significantly contributed to food and pharmaceutical laboratory accreditation as a technical auditor with the Singapore Accreditation Council since 2003. Her expertise extends to serving as a Panel Advisor for the Health Sciences Authority Proficiency Testing Programme in Chemical Metrology.

Under her leadership, AOAC SEA brings together government, industry, and academia to establish standard methods of analysis, ensuring the safety and integrity of food and products critical to global public health. Dr Hou's dedication to developing consensus-based analytical solutions enhances food safety and integrity, safeguarding public health in Southeast Asia.



## About AOAC International And AOAC SEA

Founded 139 years ago in Washington, DC, AOAC International began as the Association of Official Agricultural Chemists and now evolved into the Association of Official Analytical Collaboration, continually driven by a vision for global alignment in trusted analytical solutions.

In June 2021, AOAC SEA was established, encompassing 11 countries: Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Timor-Leste, Thailand, and Vietnam.



# Food Safety: Strategic Insights And Industry Perspectives



**Dr Jagadeesh Kodali**

*Vice President - Food Division  
Vimta Labs Ltd  
India*

## **Evolving Regulatory Requirements For PFAS Analysis And Novel Approaches**

With 25 years in the food testing industry, Dr Jagadeesh Kodali, Head of VIMTA's Food Division, is a recognized authority in the food testing and research industry. His strategic involvement with key committees of the Food Safety and Standards Authority of India (FSSAI) and the Bureau of Indian Standards (BIS) reflects his profound commitment to advancing industry standards. Herein, he will address the pressing challenges in PFAS analysis, focusing on novel approaches and strategies to effectively address contaminants of emerging concern.



**Dr Tran Dang Ninh**

*Director  
Reference Testing and Agrifood  
Quality Consultancy Center (RETAQ)  
Vietnam*

## **Advanced Analytical Techniques And Emerging Trends In Food Safety And Quality Testing**

Offering services in food safety testing, consulting, and certification, RETAQ leads the way in ensuring Vietnam's agricultural and fishery products meet global safety standards. Since 2012, under the leadership of Dr Tran Dang Ninh, RETAQ has pursued its vision with a commitment to excellence. Through his extensive experience and involvement in national committees and research projects, he offers strategic insights into the evolving landscape of food testing, shaping the industry's future direction.

# Food Safety: Strategic Insights And Industry Perspectives



**Dr Priti Amritkar**

*Director  
Envirocare Labs Pvt Ltd  
India*

## Ethylene Oxide And 2-CE Analysis And India Food Safety Market Direction

With over two decades of experience in the analytical domain, Dr Amritkar is a recipient of distinguished awards, including the Skoch Order of Merit Award 2015, the CII Award for Outstanding Performance Food Testing Laboratory 2018, and the Outstanding Entrepreneur Award 2019. In this presentation, she will explore food contamination caused by Ethylene Oxide and its metabolite, 2-chloroethanol (2-CE), which have caused thousands of product recalls since 2021, highlighting the critical need for rigorous food safety testing.



**Prof Chin-Ping Tan**

*Professor  
Universiti Putra Malaysia  
Malaysia*

## Mineral Oil Contamination In Edible Oils

Having over 500 published scientific articles and more than 20 patents filed, Prof Tan brings a wealth of experience to his advisory roles for numerous food companies and the Food Quality and Safety Division of the Ministry of Health. Nationally, he serves as an expert panel in SIRIM's working groups related to coconut and fats and oils products. Addressing the critical topic of food safety, Prof Tan will delve into mineral oil contamination in edible oils, a challenging issue due to its potential to contaminate food at any stage of processing, demonstrating the necessity of addressing it.

# Food Quality: Leading Trends And Latest Happenings



**Takehito Sagawa**

*Senior Specialist  
S&B Foods Inc  
Japan*

## **Aroma Analysis Technology Supporting Sustainable Deliciousness In Food**

Specializing in the intricate research of how aroma affects food flavour, Takehito Sagawa is well-versed in analyzing how flavour perception changes over the course of a few seconds to tens of seconds during actual eating or drinking. In fact, he has pioneered real-time and time-series analysis methods to study this phenomenon, with ongoing research aimed at practical applications. Leveraging his expertise, Takehito will explore how aroma analysis technology can spark innovative advancements in food.



**Heryani**

*Laboratory General Manager  
LPPOM MUI  
Indonesia*

## **Halal Market And Testing In Indonesia**

Heryani, head of the LPPOM Laboratory, is a seasoned expert with over 9 years of experience in Halal and vegan testing. His expertise has been crucial in contributing to the development and review of Indonesian National Standard (SNI) testing methods. As the global Halal food market is projected to surpass US\$4 billion by 2030, Heryani's insights as a well-established expert and Senior Halal Auditor in LPPOM MUI will be crucial to gain a deeper understanding of the Halal market and testing in Indonesia, a major player in the global Halal industry.

# Food Quality: Leading Trends And Latest Happenings



**Dr Armando Guidote**

*Director  
Philippine Institute of Pure and  
Applied Chemistry (PIPAC)  
Philippines*

## Philippines Roadmap To Functional Food

Since 2017, Dr Armando Guidote has been leading PIPAC as its Institute Director, transforming it into a powerhouse for chemical analysis, research, and training across diverse fields. As functional foods—products fortified with vitamins, minerals, and other bioactive compounds—surge in popularity as a proactive measure towards preventive healthcare and holistic wellness, PIPAC plays a crucial role in ensuring rigorous quality assurance for these innovative food products. This presentation is a must-listen for anyone seeking to stay informed and ahead in the latest food trends.



# Food Innovation: Shimadzu Future-Ready Solutions



**Sandy Nargund**

*General Manager  
Shimadzu (Asia Pacific)  
Singapore*



**Sateesh Tummala**

*Deputy General Manager  
Shimadzu (Asia Pacific)  
Singapore*

## Untapped Solutions For Food Safety And Quality

In today's ever-evolving food industry, the urgency for innovative analytical solutions is more crucial than ever, driven by recent contamination incidents that emphasize the need for robust methods to ensure food safety and quality. Moreover, as consumers become increasingly health-conscious, there is a growing demand for functional foods with health-enhancing properties. Coupled with this is the pressing interest in food sustainability, which is driving a shift towards alternative protein sources such as plant-based and cell-based options.

To effectively address these multifaceted challenges, Shimadzu offers a comprehensive suite of end-to-end food solutions featuring cutting-edge hardware and software, enabling laboratories to take the lead in navigating emerging food applications.

## Experience Innovation With Shimadzu Living Laboratory

Shimadzu Living Laboratory is the first-ever laboratory to synergize advanced technologies and innovations built into the instruments and informatics to offer an Autonomous Self-Sustainable Laboratory. It paves the way for Digital Transformation (DX) by seamlessly integrating every aspect of the laboratory workflow - from sample receipt to sample runs, data analysis, reporting, data management, and the entire laboratory management.

At its core, Shimadzu Living Laboratory transforms traditionally labour-intensive tasks into streamlined, high-throughput processes, which is achieved through advanced instrumentation and intelligent analysis tools, providing users the flexibility to Work from Anywhere.

Shimadzu Living Laboratory offers the most advanced yet practical workflow to automate and simplify routine operations using our AI-enabled Instruments and Informatics. It's time to accelerate the development of safe and sustainable food with Shimadzu innovations.

# FOOD SAFETY

Addressing Challenges, Protecting Health



ANALYTICAL  
INTELLIGENCE

**UFMS**  
ULTRA FAST MASS SPECTROMETRY



living  
laboratory

# PFAS Analysis

When it comes to analyzing PFAS, fast and robust detection is essential for effective monitoring. While LCMS techniques are commonly used, Shimadzu expands analytical capabilities with our HS-SPME GCMS as a complementary approach. Moreover, LCMS-QTOF enables the identification of unknown PFAS compounds, providing a complete solution for PFAS analysis through targeted and non-targeted approach.

## LCMS And GCMS Solutions

Shimadzu advanced technology suite, featuring LCMS-TQ RX series, GCMS-TQ8050 NX and LCMS-9050, provides robust solutions for PFAS analysis, be it in complex food matrices or food contact materials e.g., packaging. Equipped with proprietary Ultra-Fast Mass Spectrometry (UFMS™) technology, these systems deliver fast, high-quality results for PFAS analysis.



# Ethylene Oxide And 2-chloroethanol

Ethylene Oxide (EtO) is used to disinfect dry food commodities, as it can reduce or eliminate microbiological contamination with bacteria or fungi. However, EtO and its metabolite, 2-chloroethanol (2-CE) can cause significant health risks due to its carcinogenic, mutagenic, and genotoxic properties. Since 2020, EtO detection has led to numerous global food recalls, making it one of the largest food recall events in EU history.

## GCMS Solutions

With GCMS-TQ8050 NX, trace level quantification of EtO and 2-CE is easily achievable. This advanced system offers the flexibility of liquid injection and dynamic headspace technique, both meeting regulatory compliance with the European Commission's Maximum Residue Levels (EU-MRLs) to address the food safety concern.



# Heavy Metals And Trace Elements

Heavy metals such as cadmium, chromium, and lead are natural components of the Earth's crust and can enter the human body through food, drink, and air. While trace levels of elements like chromium are essential for body functions, they can become harmful and poisonous when present at high concentrations. To ensure food safety, elemental analysis can be conducted using AAS, ED-XRF, ICP-OES and ICP-MS.

## ICP-MS And Spectroscopy Solutions

Recognized as the Red Dot Design Award and iF Design Award winners, the AA-7800 and ICPMS-2050 deliver high sensitivity elemental analysis with efficiency. As for EDX-7200, it uniquely performs elemental analysis without the need for sample pretreatment. These instruments are ideal for both ultrafast screening and routine analysis. Shimadzu provides a comprehensive suite of solutions that deliver the necessary reliability and robustness to ensure food safety.



# Toxins

Toxins, including mycotoxins, dioxins, and marine toxins, pose significant health risks. Naturally occurring toxins like mycotoxins and marine toxins can cause adverse health effects such as acute poisoning and paralytic shellfish poisoning respectively. On the other hand, dioxins are mainly by-products of industrial practices. Considered as persistent organic pollutants (POPs), they do not break down easily and are highly toxic.

## UFMS™ Solutions

Equipped with Ultra-Fast Mass Spectrometry (UFMS™), Shimadzu delivers robust solutions for the analysis of dioxins with GCMS, as well as the detection of mycotoxins and marine toxins with LCMS. To streamline workflow, Shimadzu offers ready-to-use method packages including EU regulation compliant GC-MS/MS analysis for dioxins and LC-MS/MS analysis for mycotoxins, ensuring minimal setup time while delivering confident results.





# Mineral Oil Contamination In Edible Oils

Mineral oil contamination can occur during production, packaging, transportation, or storage. New industrial processes, environmental pollution, and climate change have resulted in toxic residues being increasingly detected in edible oil, e.g., pesticides, heavy metals, and mycotoxins. Advanced analytical technologies such as HPLC, LC-MS/MS, and GCMS are hence essential for detection.

## MOSH/MOAH Analyzer And Contaminant Testing

Shimadzu offers fully automated testing solutions for detecting mineral oils (MOSH/MOAH) in food and packaging using the online HPLC-GC-FID system. To tackle emerging contaminants, LCMS-TQ RX series, GCMS-TQ8050 NX, AA-7800, and ICPMS-2050 systems offer robust capabilities for quantifying a wide range of trace-level contaminants, ensuring continual safe consumption of edible oils.

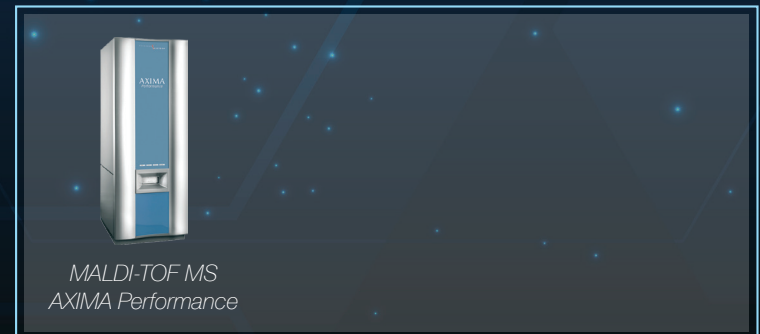


# Food-Borne Pathogens

In the event of food poisoning, identification of the causative factor is extremely important for infection tracking, treatment, and prevention. MALDI-TOF MS offers a fast, easy, and reliable way of identification by direct measurement of the microorganisms and matching these species-specific mass spectral patterns to a database. This allows for swift identification of food-borne pathogens to allow for proper controlled measures.

## Microorganism Identification Solutions

AXIMA MALDI-TOF MS system enables fast microorganism identification in 2 minutes, capable of classifying/identifying Gram-positive and Gram-negative bacteria, yeasts, fungi, and spores. The iDPlus feature provides detailed identification at family, genus, species, and subspecies levels, ensuring thorough microbial analysis.



# FOOD QUALITY

Ensuring Authenticity, Delivering Satisfaction



ANALYTICAL  
INTELLIGENCE

**UFMS**  
ULTRA FAST MASS SPECTROMETRY



living  
laboratory

# Halal Authentication

The accidental or intentional adulteration of pork, ethanol, among other forbidden ingredients into food products poses a serious challenge for individuals following specific religious dietary restrictions, particularly those concerning Halal or Kosher foods. For Muslims, these Halal restrictions are part of Islamic law concerning Halal and Haram foods. To ensure foods are truly Halal, scientific approaches are increasingly used to identify any presence of such Haram ingredients.

## Halal Testing Solutions

Shimadzu instrumental-based Halal integrity testing solutions provide high sensitivity in detecting trace adulterants, including pork, gelatin, lard, and alcohol, within complex food matrices. Automated meat species identification is possible through the MultiNA system, processing up to 108 samples. These testing solutions deliver accurate identification through both targeted and non-targeted approaches, ensuring Halal compliance and integrity.



# Functional Food

As the global healthcare market expands rapidly, the significance of functional foods is becoming increasingly evident. Unlike nutrient concentrates, functional foods are in their typical food forms and contain beneficial components that support human health. Examples of functional components include lutein in spinach and carotenoids in capsicum, known for their health-promoting properties.

## LCMS And SFC-MS Solutions

Functional foods can be fortified with supplements such as vitamins, minerals, probiotics, and fiber to enhance health benefits. Shimadzu Ultra-Fast Mass Spectrometry (UFMS™) solutions play a crucial role in testing these components to ensure overall food quality and support accurate labeling. Equipped with proprietary technologies, these solutions enable ultra-fast and robust testing that contributes to the development of new functional food products.



# Aroma Analysis

Aroma components are classified into top, middle, and base notes, based on their volatility, each influencing the overall flavor and fragrance composition. Traditionally, fragrance evaluation in product testing labs is conducted by highly trained experts, a process that is often time-consuming. However, in recent years, there is a growing interest in utilizing GCMS instrumental analysis to enhance efficiency in evaluating fragrances.

## GCMS Solutions

While typical GC-MS/MS solutions may involve multidimensional chromatography or deconvolution in data analysis, Shimadzu solutions can simplify the complex work with the Smart Aroma Database and Off-Flavor Database. Particularly, the Smart Aroma Database features >500 key compounds and automatically detects aroma compounds from scan measurements with high accuracy, streamlining the process for a greater boost in productivity.



# Alternative Protein

Sustainable meat is gaining significant attention in global food markets, primarily categorized into two types: plant-based meat and cultured meat. Plant-based meat is made from vegetable proteins, including soybeans, peas, and mushrooms, whereas cultured meat is developed by culturing stem cells from animals such as cattle. As the demand for alternative protein increases, there is corresponding focus on the texture and flavor quality of these products.

## Food Development Solutions

Shimadzu advanced solutions ensure optimal quality and nutrition by providing precise measurements of moisture, fat, and protein content with LCMS, GCMS, and Moisture Analyzer, whereas ICP-MS plays a critical role in metal analysis, essential to evaluate the safety of novel protein sources. As a total solution, EZ-X (Testing Machine) offers texture analysis to achieve an authentic mouthfeel.



## Food Sustainability

# Shimadzu World Lab Network



WORLD LAB NETWORK

Over the past 149 years, Shimadzu has more than 100 collaborations, partnerships, and MoUs with leading universities and institutions worldwide. Our longstanding history highlights our commitment to Excellence in Science and dedication to driving global innovations.

In today's world, marked by unprecedented complexities and rapid advancements, the power of collaboration has never been more critical. Together, let us harness our collective strength and leverage our capabilities to pave the way towards transformative success.



Scan for more

## About Our Collaborators



Founded in 1923, S&B Foods has been a trailblazer in the production of spices, condiments, and cooking ingredients. As the first company to successfully manufacture curry powder in Japan, S&B Foods continues to innovate and expand globally. Today, S&B Foods offers a flavorful selection, enriching the culinary scene worldwide.



The Philippine Institute of Pure and Applied Chemistry (PIPAC) is an independent, non-profit scientific institute. Specializing in chemical analysis, research, and training, PIPAC is well-known for delivering fast, accurate, and reliable results, which is a testament to its commitment towards upholding international standards and methods.



LPPOM MUI is the first Halal Inspection Agency in Indonesia. For over 34 years, LPPOM MUI has forged strong partnerships with businesses in more than 65 countries. Leveraging its advanced data resources and state-of-the-art infrastructure, LPPOM MUI is ready to provide the best solution in the halal assurance system.



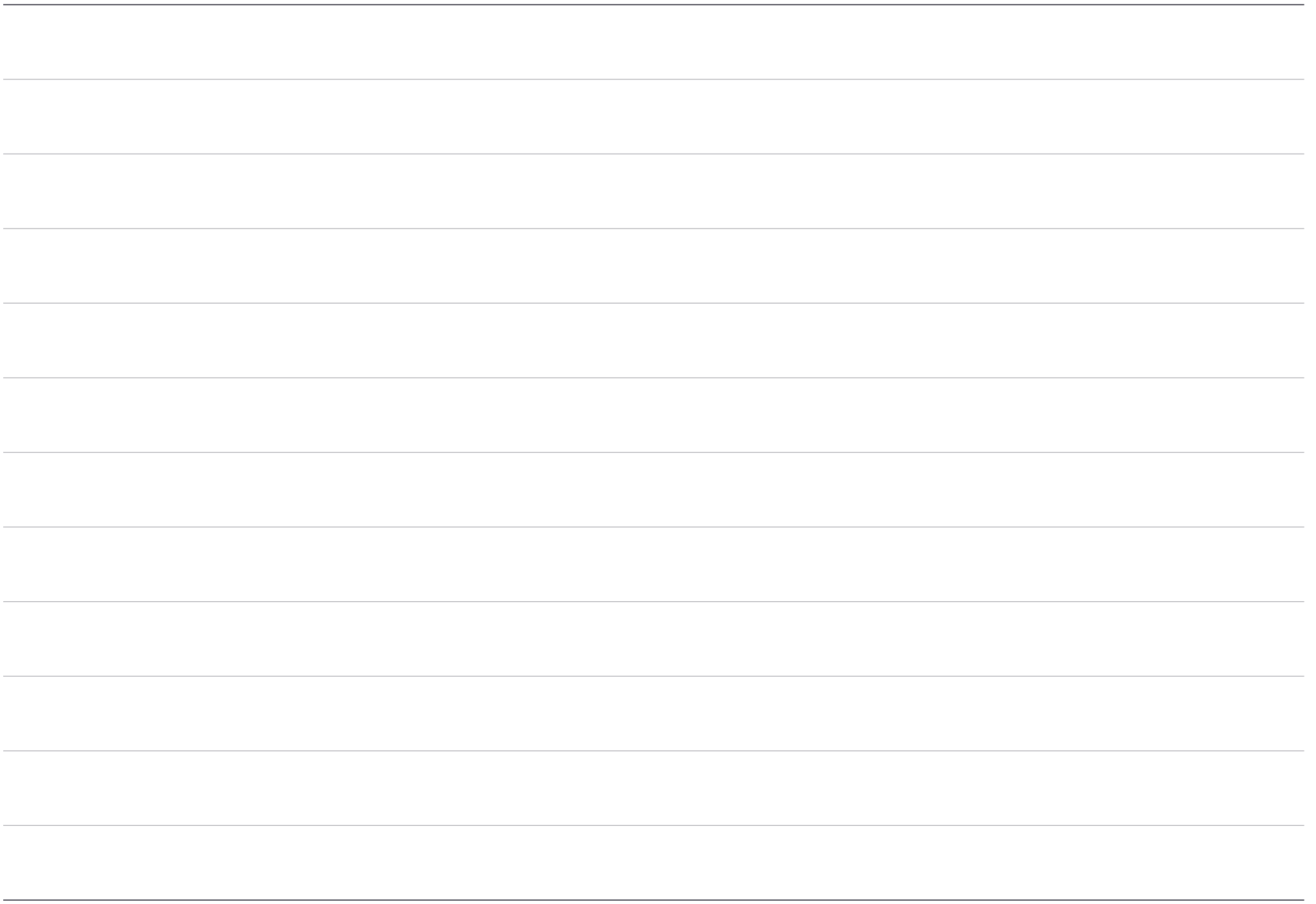
Reference Testing and Agrifood Quality Consultancy (RETAQ) is well-equipped with advanced analytical instruments, making it a leading high-quality food testing laboratory in the country. Ensuring food safety and controlling quality, RETAQ facilitates the smooth export of Vietnam's agricultural, forestry, and fishery (AFF) products in the world market.















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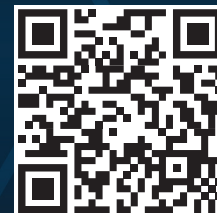
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