AASCHARYA SRIVASTAV, Ph.D.

Food and Nutrition Sciences · Research & Development · New Product Development · Emulsions, Hydrocolloids & Shelf-Life

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PROFESSIONAL SUMMARY

- Ph.D. in Food and Nutrition Sciences. Thesis submitted; viva scheduled August 2026. ASRB-NET qualified.
- Four years of hands-on product development in emulsified plant-based systems, carrying formulations from bench prototype through pilot-scale validation.
- Delivered more than 20 formulation trials on coconut milk based products, correcting oil-in-water emulsion instability, microbial spoilage and sensory drift.
- Reached shelf life beyond three months under both refrigerated and ambient storage through emulsifier and hydrocolloid reformulation, homogenisation and heat-treatment redesign, and packaging change.
- Optimises formulations using Design of Experiments and Response Surface Methodology in Design-Expert and Minitab, with neural network models in R confirmed through pilot batches run at predicted optima.
- Works to FSSAI product category standards, additive permissible limits, notified analytical methods and nutrition labelling requirements.
- Named on four patent and industrial design filings in food preservation and dairy processing.
- Applying emulsion, ingredient functionality and shelf-life expertise to New Product Development in sauces, dressings, condiments and seasonings.

TECHNICAL EXPERTISE

- **Emulsion systems and ingredient functionality:** Oil-in-water emulsion design and stabilisation, emulsifier selection and dosage optimisation, hydrocolloid and stabiliser systems, creaming and phase-separation control, viscosity and mouthfeel modulation.
- **Product development and formulation:** New Product Development from brief to prototype, bench-to-pilot scale-up, raw material and ingredient screening, food additive application, recipe standardisation, specification development, commercial feasibility.
- **Process technology:** Homogenisation, thermal processing and heat-treatment optimisation, spray drying, emulsification, process parameter optimisation, pilot batch execution, continuous improvement.
- **Stability, quality and food safety:** Shelf-life and storage stability studies, microbiological and pathogen testing, packaging optimisation, quality assurance and quality control, analytical validation, FSSAI regulatory compliance.
- **Sensory and consumer:** Sensory panel design and execution, hedonic and descriptive testing, texture profile analysis, consumer acceptance testing, consumer insights.
- **Statistical and predictive optimisation:** Design of Experiments, Response Surface Methodology, multivariate analysis, machine learning, neural networks, predictive quality modelling.

CORE COMPETENCIES

- **Role and function:** Food Scientist · Food Technologist · Research and Development (R&D) · New Product Development (NPD) · Product Development · Food Innovation
- **Formulation and ingredients:** Emulsions · Emulsifiers · Hydrocolloids · Stabilisers · Food Ingredients · Ingredient Functionality · Raw Materials · Food Additives · Texture Optimisation
- **Processing and scale-up:** Food Processing · Process Optimisation · Pilot Plant · Scale-Up · Product Trials · Food Manufacturing · Continuous Improvement
- **Quality, safety and compliance:** Shelf-Life · Stability Studies · Packaging · Quality Assurance · Quality Control · Food Safety · Regulatory Compliance · FSSAI · Specification Development · Product Validation
- **Commercial and collaborative:** Consumer Insights · Cross-Functional Collaboration · Project Management · Stakeholder Engagement · Commercialisation

PROFESSIONAL EXPERIENCE

Senior Research Fellow, Food Science R&D | MPUAT, Udaipur *Feb 2024 - Present*

Plant-based emulsified product development programme funded by the University Grants Commission, Government of India.

- Developed a coconut milk based dairy alternative range across 20+ formulation trials, advancing prototypes from laboratory batches to pilot-scale validation runs at predicted optimum conditions.
- Eliminated oil-in-water emulsion instability and creaming by reformulating emulsifier and hydrocolloid stabiliser systems and re-specifying homogenisation and heat-treatment parameters, holding product integrity through the full storage trial.
- Extended shelf life beyond three months under refrigerated and ambient storage by pairing preservation-system redesign with thermal process optimisation and a packaging format change, verified through microbiological and pathogen testing.
- Cut trial volume to reach optimum by modelling formulation and process inputs against quality responses using Response Surface Methodology in Design-Expert and Minitab plus artificial neural networks in R (caret, neuralnet), proving each optimum through confirmation batches.

- Applied FSSAI product category standards, additive permissible limits and notified analytical methods to formulation and testing decisions, and prepared nutrition declarations to labelling requirements.
- Ran analytical characterisation in house across every iteration: proximate composition, Kjeldahl protein, Soxhlet fat, spectrophotometry, flame photometry, texture profile analysis and spray drying trials.
- Directed sensory evaluation panels across formulation iterations, converting hedonic and descriptive scores into targeted texture and flavour corrections.
- Won Ministry of Food Processing Industries funding as sole author of the technical proposal on AI-assisted plant-based formulation, then delivered the project inside a cross-functional technical team.
- Supervised laboratory technicians and interns across concurrent workstreams, standardised written protocols, calibrated analytical instruments and held audit-ready documentation through national funding-agency review.

Senior Consultant, Research & Advisory | Tridifa Consulting LLP *Apr 2026 - Present*

Commissioned research and evaluation for donors and commercial clients. Held concurrently with the fellowship above.

- Designed a B2C consumer research study for a premium kitchenware brand, setting screening criteria, quota controls and recruitment of 175 high-income consumers across seven cities against a costed field schedule.
- Lead author on five commissioned technical proposals covering study design, sampling strategy, instrument specification, quality assurance protocols and costed delivery plans.
- Designed a stratified 360-school sample across 15 districts at 95 per cent confidence and 5 per cent margin of error for a Tata Trusts supported school library baseline, incorporating reading assessments of approximately 3,600 students and an independent quality assurance function running 10 per cent real-time back-checks.
- Derived sample size and statistical power for a sexual and reproductive health baseline in urban West Bengal using Cochran's formula with finite-population correction, specifying 125 systematic-sample interviews against a 4,000-family frame, reporting margin of error and minimum detectable change as explicit design parameters.
- Specified mixed-methods instrument suites including household survey modules, adolescent modules under separate assent procedures, focus group guides, key-informant protocols and service-mapping checklists, with CAPI validation rules, supervisor spot checks and back-check routines built into each.
- Anchored evaluation methodology to OECD-DAC criteria adapted for pre-intervention baselines, and to national frameworks including NEP 2020, NCF-SE and NIPUN Bharat.
- Developed a seven-stage implementation and monitoring framework for a 50-school, 1,500-student digital literacy programme costed at Rs 902 per student, with baseline, midline and endline assessment built into the delivery model.
- Contributed to the final evaluation of the BENGO project, Building Climate Resilient Communities for Food and Income Security, in Raikia Block, Kandhamal district, Odisha.
- Led field-based mixed-methods assessment for SEEDS, the Sustainable Environment and Ecological Development Society, covering more than 150 respondents, supervising enumerators through data collection and producing assessment reports with strategic recommendations.
- Conducted policy and secondary research on the Pradhan Mantri Awas Yojana covering implementation frameworks, beneficiary outreach and scheme effectiveness, and supported data management and technical reporting for National Thermal Power Corporation monitoring and evaluation.
- Coordinated with officials at block, district and institutional levels across research and implementation assignments for data collection, field coordination, monitoring and reporting.

Junior Research Fellow | MPUAT, Udaipur *Feb 2022 - Feb 2024*

- Standardised laboratory and analytical protocols for value-added food formulation and ran proximate analysis across raw materials and prototype batches.
- Completed doctoral coursework at 8.4/10 GPA, including public health nutrition and research ethics aligned to ICMR guidelines.

Guest Lecturer, B.Tech Food Technology | MPUAT, Udaipur *Jan - Jun 2022*

- Taught Food Additives and Meat and Poultry Processing to 30+ undergraduates, designing lecture material, laboratory demonstrations and assessments.

INDUSTRIAL PRODUCT DEVELOPMENT EXPERIENCE

- **Coconut Milk Dairy Alternative Range (2022 - 2026).** Lead developer. More than 20 formulation trials from concept to pilot-scale validation, delivering shelf life beyond three months under refrigerated and ambient storage. Output includes two journal manuscripts and one filed patent.
- **Millet Bakery Product Optimisation (2026).** Optimised millet incorporation levels in bakery formulations through AI-driven statistical modelling, balancing texture, sensory acceptance and nutritional profile. First position, oral and poster, ICSAFS 2026.
- **AI-Assisted Plant-Based Formulation, Ministry of Food Processing Industries.** Authored the funded proposal and delivered the technical work, applying machine learning to ingredient and process parameter selection for plant-based products.
- **Laboratory Chemist (Trainee), Annakut Biscuit Co. Pvt. Ltd.** Four-month industrial training. Ran raw material and finished-product quality control testing on a commercial bakery line and documented food safety and hygiene compliance.

EDUCATION

- **Ph.D., Food and Nutrition Sciences** Maharana Pratap University of Agriculture and Technology (MPUAT), Udaipur, 2021 - 2026. Thesis: Development of Coconut Milk-Based Value-Added Products and Their Quality Assessment. Submitted; viva

scheduled August 2026. Advisor: Dr Nikita Wadhawan, Associate Professor and Head, Department of Dairy and Food Technology. UGC national doctoral fellowship. Pre-thesis 84 per cent. Coursework GPA 8.4/10. Skills developed: emulsion formulation and stabilisation, hydrocolloid and emulsifier systems, shelf-life and storage stability testing, sensory evaluation, microbiological analysis, spray drying, packaging optimisation, response surface methodology and neural network modelling.

- **M.Sc., Food and Nutrition** Chandra Shekhar Azad University of Agriculture and Technology (CSAUA&T), Kanpur, Uttar Pradesh, July 2018 - December 2020. 79 per cent. University Silver Medal. Thesis: Consumer Awareness, Attitude and Preferences Towards Convenience Foods. Sole investigator on a consumer study of more than 100 respondents, covering questionnaire design, sampling strategy, field data collection, statistical analysis and reporting. Skills developed: consumer and market research, survey instrument design, sampling design, quantitative and qualitative analysis, and consumer insight reporting for packaged and convenience food categories.
- **B.Sc., Community Nutrition** Chandra Shekhar Azad University of Agriculture and Technology (CSAUA&T), Kanpur, Uttar Pradesh, 2014 - 2018. 80 per cent. Foundation in food chemistry, food microbiology, nutritional biochemistry, food analysis, product development and community nutrition practice.

PROFESSIONAL TRAINING, WORKSHOPS & CERTIFICATIONS

- Advanced Techniques of Food Processing and Preservation, National Institute of Food Technology Entrepreneurship and Management (NIFTEM), Government of India, 2020.
- Enforcement of Food Safety in Indian Food Industries, Chandra Shekhar Azad University of Agriculture and Technology, Kanpur, 2019.
- Recent Trends in Value Addition of Vegetables, Chandra Shekhar Azad University of Agriculture and Technology, Kanpur, 2019.
- Recent Advances in Post-Harvest Processing of Pulses and Vegetables, March 2019.
- National Training on Recent Advances in Protected Cultivation of Vegetables, Centre for Advanced Agricultural Science and Technology (CAAST), World Bank-funded project, February 2019.
- 7-Day National Programme on Advanced Research Methodology and Data Analysis in Agricultural Sciences, Directorate of Human Resource Management, Agriculture University, Kota, Rajasthan, June 2026.
- Training in Public Health Nutrition and Research Ethics aligned with Indian Council of Medical Research (ICMR) guidelines, MPUAT, Udaipur.
- Course on Computer Concepts (CCC), National Institute of Electronics and Information Technology (NIELIT), Government of India, 2019.

RESEARCH HIGHLIGHTS

- **Emulsion stabilisation.** Identified emulsifier and stabiliser combinations holding oil-in-water systems against creaming and phase separation across a three-month ambient storage window, transferable to dressing and sauce emulsions.
- **Predictive formulation modelling.** Built artificial neural network models in R predicting quality responses from formulation and process inputs, shortening concept to validated optimum.
- **Preservation technology.** Developed sensor-driven dispensing of nano-emulsified natural preservatives with AI-based spoilage prediction, filed as an Indian patent application.

TECHNICAL SKILLS

- **Formulation and processing:** Emulsification · Emulsifier and stabiliser system design · Hydrocolloid application · High-shear homogenisation · Thermal processing and heat treatment · Spray drying · Pilot batch execution · Packaging format and material optimisation · Bench-to-pilot scale-up
- **Analytical and instrumentation:** Proximate analysis · Kjeldahl protein estimation · Soxhlet fat extraction · UV-Visible spectrophotometry · Flame photometry · Texture Profile Analysis · Microbiological and pathogen testing · Shelf-life and storage stability testing · Instrument calibration and verification
- **Sensory and consumer:** Sensory panel design and execution · Hedonic testing · Descriptive analysis · Consumer acceptance testing · Questionnaire and survey design · Consumer insights research
- **Statistical and modelling software:** Design-Expert · Minitab · SPSS · R programming (caret, neuralnet) · Advanced Microsoft Excel
- **Statistical and modelling methods:** Design of Experiments · Response Surface Methodology · Multivariate analysis · Machine learning · Neural networks · Predictive quality modelling · Data cleaning and validation
- **Data collection and nutrition software:** KoboToolbox · Open Data Kit (ODK) · CAPI-based digital data collection · Diet Cal · NetNut nutrition-assessment software
- **Regulatory and quality systems:** FSSAI product category standards · FSSAI additive permissible limits · FSSAI notified test methods · Nutrition labelling and declaration compliance · Food safety and hygiene documentation · Audit-ready research documentation · Written protocol standardisation
- **Scientific communication:** Manuscript preparation · Technical report writing · Patent documentation · Funding and technical proposal development · Policy briefs · Scientific illustrations · Presentation development

ACHIEVEMENTS

- First position in both oral and poster presentation, International Conference on Sustainable Agriculture and Food Safety (ICSAFS 2026), Parul University, for AI-driven optimisation of millet incorporation in bakery products.
- Young Scientist Award, Agro Environmental Development Society, 2025.
- Emerging Scientist Award, CITAAS-2024 International Conference.

- ASRB-NET qualified, Agricultural Scientists Recruitment Board, Indian Council of Agricultural Research, 2023.
- Junior Research Fellowship, University Grants Commission, Government of India, national doctoral fellowship, 2022.
- University Silver Medal, M.Sc. Food and Nutrition, Chandra Shekhar Azad University of Agriculture and Technology, Kanpur.

PUBLICATIONS

Books and book chapters:

- Srivastav, A. (2024). Food Science and Nutrition: Objective Practice Handbook. Vikas Publishers. ISBN 978-81-955000-0-0.
- Ojha, K., Maurya, R., and Srivastav, A. (2023). Food and Nutrition Policy and Advocacy in Communities. In Advances in Community Nutrition.
- Srivastav, A. Innovations in Food Fortification Technologies. In Chemical Formulation of Fortified Foods for Optimal Nutrition. ISBN 978-81-971650-6-1.
- Srivastav, A. Entrepreneurship and Nutrition. In Entrepreneurship in the Modern World. ISBN 978-81-19281-54-1.
- Srivastav, A. Alternative Proteins and Climate-Smart Foods. Springer, book chapter. (Under review.)

Journal articles:

- Srivastav, A. Comparative physicochemical and nutritional analysis of coconut milk and commercial plant-based dairy alternatives. ISSN 2617-4707. (Under review.)
- Srivastav, A. Coconut milk among plant-based dairy alternatives: a multidimensional comparative review of nutritional, functional and circular processing characteristics. Current Trends in Nutrition and Food Science. (Under review.)

Other scholarly contributions:

- Srivastav, A., and Singh, A. (2023). Microgreens. Just Agriculture Multidisciplinary e-Newsletter.
- Srivastav, A. Enhancement of Youth Power in India: National Youth Policy (2014) and its Micro-level Implementation.

Additional research manuscripts are under preparation and in the publication pipeline.

PATENTS & DESIGN REGISTRATIONS

- Automated Milk Quality Testing and Adulteration Detection Device. Indian Design Registration No. 479297-001, class 10-05. Registered 6 November 2025; certificate issued 16 July 2026.
- A System and Method for Extending Shelf Life of Perishable Food Using Sensor-Driven Dispensing of Nano-Emulsified Natural Preservatives and AI-Based Spoilage Prediction. Indian Patent Application No. 202511070829 (filed).
- System Architecture for an IoT-Enabled Milk Vending Machine. Indian Design Application No. 406670-001 (filed).
- Automated Teat-Cleaning and Hygienic Milking Preparation System, developed to improve raw milk yield and microbiological quality at dairy farm level. Contributing inventor.

CONFERENCES & PRESENTATIONS

- International Conference on Sustainable Agriculture and Food Safety (ICSAFS 2026), Parul University, India. Oral and poster presenter; first position in both categories.
- 12th International Conference on Emerging Issues in Agricultural, Food Technology, Biological and Applied Sciences for Global Development (EIAFTBASGD-2025), MPUAT, Udaipur. Presenter.
- 35th Biennial Conference of the Home Science Association of India (HSAI), Umiam, Meghalaya, 2024. Presenter.
- Embracing the Magic of Millets, Maharaja Sayajirao University of Baroda, Gujarat, 2023. Presenter.
- International Conference on Science, Technology and Society, Ajmer, Rajasthan, 2023. Presenter.
- National Conference on National Youth Policy, G.B. Pant University of Agriculture and Technology, 2018. Presenter.

PROFESSIONAL SERVICE & MEMBERSHIP

- Peer reviewer, invited to review manuscripts for journal publication.
- Contributed to the organisation of academic conferences and event delivery.
- Member, Nutrition Society of India.

LANGUAGES

- **Hindi:** Native speaker. Full professional fluency in reading, writing, speaking and technical discussion.
- **English:** Proficient. Language of all doctoral research, manuscripts, patent documentation, technical proposals and conference presentation.
- **French:** CEFR Level A2. Elementary working knowledge covering everyday reading, writing and conversation.

REFERENCES

- **Dr Nikita Wadhawan.** Associate Professor and Head, Department of Dairy and Food Technology, MPUAT, Udaipur. Doctoral supervisor. nikiwadhawan@gmail.com
- **Dr Sanjay Kumar Jain.** Department of Processing and Food Engineering, MPUAT, Udaipur. sanjaykjain16@hotmail.com · ORCID 0000-0002-2692-7555