

Kumayl Hassan Akhtar

PhD

Agricultural Product Processing and Utilization

Institute of Food Science and Technology

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Research Interest

- Flavor chemistry and volatile compounds analysis
- Food processing techniques and quality evaluation
- Heat-induced structural variations in meat protein
- Protein digestibility and oxidative changes
- Application of GC-MS, E-nose, and LF-NMR in food systems
- Novel technologies in the product development

Education

PhD in Agricultural Product Processing and Utilization | 2021-2025

Graduate School of Chinese Academy of Agricultural Sciences (GSCAAS), Beijing, China

- **Thesis title:** “Preheating and reheating on the eating quality and protein digestion of stir-fried chicken”
- The research was focused on the effect of preheating and doneness levels on the final product after storage and reheating. Research concluded that preheating up to medium well doneness level and then reheating increased the eating quality, flavor, and digestibility of stir-fried chicken.

MPhil in Meat Science and Technology | 2018-2021

University of Veterinary and Animal Sciences (UVAS), Lahore, Pakistan

- **Thesis title:** “Effect of Packaging Atmosphere on Microbiological and Biochemical Shelf life of Poultry Breast Fillets”
- The research was focused on the microbiology and freshness of the poultry breast fillets preserved through modified atmosphere packaging and vacuum packaging. Results concluded that MAP lowered the microbial count and retained the freshness of the meat preserved at 4°C for 10 days.

Bachelor's in Doctor of Veterinary Medicine | 2013-2018

University of Veterinary and Animal Sciences (UVAS), Lahore, Pakistan

- Courses include Veterinary Anatomy, Histology, Physiology, Microbiology, Pathology, Pharmacology, Theriogenology, Medicine, Surgery, Breeding and Genetics, Nutrition, Dairy farming, Beef and Poultry production, Biostatistics, and Biochemistry.
- The internship was part of the degree, and I completed my internship at a dairy farm.

Research Experience

PhD researcher | GSCAAS, Beijing, China | 2021-2025

- Investigated flavor compound formation and protein structural changes in heat-treated chicken using GC-MS, E-nose, E-tongue, SDS-PAGE, TBARS, LF-NMR, and fluorescence spectroscopy
- Conducted stepwise heating at different doneness levels for industry application
- Analyzed digestion profiles via in vitro protein digestibility method

MPhil researcher | UVAS, Lahore, Pakistan | 2018-2020

- Utilization of modified atmosphere packaging and vacuum packaging machines
- Microbiological analysis and meat freshness detection

Publications

- **Akhtar, K. H.**, Gao, Z., Zhang, Z., Sun, X., Yu, Y., Ma, J., Zhang, D., Wang, Z. (2025). Optimizing Protein Profile, Flavor, Digestibility, and Microstructure: The Impact of Preheating and Reheating in Stir-Fried Chicken. *Foods*, 14(4), 643. <https://doi.org/10.3390/foods14040643>.
- Gao, Z., Ma, J., Zhang, D., **Akhtar, K. H.**, He, J., & Wang, Z. (2025). Changes in the safety and edible quality of stir-fried chicken packaged using coated tinfoil bowls during open-fire reheating: Experimental and visualization modeling. *Food Chemistry*, 480, 143981. <https://doi.org/10.1016/j.foodchem.2025.143981>.
- Sun, X., Yu, Y., Saleh, A. S., **Akhtar, K. H.**, Li, W., Zhang, D., & Wang, Z. (2024). Conformational changes induced by selected flavor compounds from spices regulate the binding ability of myofibrillar proteins to aldehyde compounds. *Food chemistry*, 451, 139455. <https://doi.org/10.1016/j.foodchem.2024.139455>.
- Sun, X., Yu, Y., Wang, Z., **Akhtar, K. H.**, Saleh, A. S., Li, W., & Zhang, D. (2024). Insights into flavor formation of braised chicken: Based on E-nose, GC-MS, GC-IMS, and UPLC-Q-Exactive-MS/MS. *Food Chemistry*, 448, 138972. <https://doi.org/10.1016/j.foodchem.2024.138972>.
- Wang, S., Zhang, D., Yang, Q., Wen, X., Li, X., Yan, T., **Akhtar, K. H.**, Huang, C. (2024). Effects of different cold chain logistics modes on the quality and bacterial community succession of fresh pork. *Meat Science*, 213, 109502. <https://doi.org/10.1016/j.meatsci.2024.109502>.
- Nauman, K., Jaspal, M. H., Asghar, B., Manzoor, A., **Akhtar, K. H.**, Ali, U., . . . Badar, I. H. (2022). Effect of different packaging atmosphere on microbiological shelf life, physicochemical attributes, and sensory characteristics of chilled poultry fillets. *Food Science of Animal Resources*, 42(1), 153. <https://doi.org/10.5851/kosfa.2021.e71>.
- Raza, M. A., Durrani, A. Z., Saleem, M. H., Ashraf, K., Ali, M., **Akhtar, K. H.**, & Rubab, N. (2022a). Detection of antibiotic residues of penicillin and oxytetracycline in milk. *Punjab University Journal of Zoology*, 37(1), 41-48. <https://doi.org/10.17582/journal.pujz/2022.37.1.41.48>.
- Raza, M. A., Durrani, A. Z., Saleem, M. H., Ashraf, K., Ali, M. M., **Akhtar, K. H.**, & Rubab, N. (2022b). Survey study on food safety, animal welfare, One Health policy formulation and implementation through legislation. *Punjab University Journal of Zoology*, 37(1), 59-66. <https://doi.org/10.17582/journal.pujz/2022.37.1.59.66>.

Skills and techniques

Analytical Instruments

- GC-MS, SDS-PAGE, LF-NMR, E-nose, E-tongue, Texture Analyzer, Spectrophotometer, MAP, Basic machine operations

Data Analysis

- SPSS, Microsoft Excel, PCA

Graphical Analysis

- OriginPro, Microsoft Excel, GraphPad

Lab skills

- Digestibility analysis, Protein and lipid oxidation, moisture distribution, Microbiological analysis, Basic lab protocols

Languages

- English: IELTS band score- 6.0 (Listening-6.0, Reading-5.5, Writing-6.0, Speaking-5.5) | 29.10.22
- Chinese: HSK Test score- 206 (Listening-85, Reading-53, Writing-68) | 21.04.24
- Urdu (native)

Awards and Scholarships

- Chinese Government Scholarship (CGS) | 2021-2025
- 2021-RMC Virtual Processed Meats Contest (IMSA) (*secured 9th position*) | 2021

Conferences and Seminars

- “Promoting Research Excellence in Academics across Pakistan” | Elsevier & Pakistan, 2022
- “Agricultural Disaster and Animal Diseases Prevention and Control for Pakistan” | MARA China, 2021
- “New Breeding Technologies for Food and Nutritional Security” | COMSTECH Pakistan, 2021
- “International Buffalo Congress” | UVAS & L&DD Pakistan, 2019
- “International Poultry Expo” | PPA Pakistan, 2019

Internships and trainings

Intern

- Beijing Henghuitong Meat Food Co., Limited, China | 2025
 - Observed quality control procedures
 - Learned about product development

- Punjab Agriculture & Meat Company, Pakistan | 2020
 - Pre and post-slaughter stress management
 - Slaughtering protocols
 - Sanitation and good hygiene practices
- 3S dairy farm, Pakistan | 2018
 - Animal Nutrition
 - Calf Care
 - Herd Health
 - Breeding Management

Trainee

- Hands on training workshop on biosafety in collaboration with Penn State University, USA | 2018
 - Laboratory protocols
 - Animal handling
- Rescue 1122, Pakistan | 2012
 - Cardiopulmonary resuscitation (CPR)
 - Handling in an emergency
 - Use of a first aid kit
- Computer Based Training (CBT) by IEEE Foundation, USA | 2012
 - Basic Computer skills
 - Microsoft Office (Word, PowerPoint, Excel)

Extra-curricular activities

- Participation in short videos and photography contests.
- Coordinator in Blood Donor Society, UVAS, Lahore.
- Volunteer at Jihad-for-thalassemia for thalassemia patients.
- Organized free treatment camps, vaccination, and deworming camps in rural areas of Pakistan.

Self-Motivation

- Strong results-driven mindset, focused on achieving goals efficiently
- Proactive and solution-oriented approach to tasks and challenges
- Self-disciplined and committed to continuous learning and skill development