

Zichen Zhao

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With a solid foundation in food chemistry, safety, and biochemistry, I excel in analyzing food composition, ensuring safety standards, and comprehending biochemical processes. My dedication lies in elevating food quality and safety through a profound understanding of molecular interactions, utilizing biochemistry principles to enhance nutritional value and support public health initiatives. As a skilled researcher specializing in bioactive compounds, proteins, and polysaccharides, I focus on innovative solutions to boost health benefits. Proficient in communication, I effectively present research findings and cultivate industry partnerships to drive advancements in food science for the betterment of public health.

QUALIFICATION

PhD candidate Sep 2022 - Jul 2025

The Hongkong Polytechnic University

The PhD program was initially offered and conducted in the Department of Applied Biology and Chemical Technology (ABCT) from 2022 to 2023, before transitioning to the Department of Food Science and Nutrition (FSN) from 2023 to 2025. The research primarily focused on bioactive compounds derived from fungi and their potential health benefits. The advanced findings highlight the exploration of proteins and polysaccharide complexes extracted from fungi, investigating their effects on immunostimulatory activity and conducting comprehensive nutritional evaluations. These findings could potentially lead to the development of natural immunomodulators for future applications.

Master Degree in Food Science and Technology/ Food Safety Sep 2014 - Jul 2016

University of Copenhagen

During this period of study, I explored key areas such as microbiological and chemical hazards, foodborne pathogens, and risk assessment. The curriculum emphasized the development and implementation of effective food safety management systems, including HACCP (Hazard Analysis and Critical Control Points) and other regulatory frameworks. I also conducted physical chemistry experiments, particularly emphasizing the exploration of antioxidant activity and calcium binding characteristics of isomeric hydroxy benzoates.

Bachelor Degree in Food Science and Engineering Sep 2010 - Jun 2014

Northeast Forestry University

During this study, I acquired knowledge in biology, chemistry, engineering, and nutrition, which equipped me with the skills necessary to innovate and enhance food systems.

EXPERIENCE

Teaching Assistant Sep 2022 - Oct 2024

The Hongkong Polytechnic University

- Guided over 30 students in Food Engineering and Processing and Food Safety & Technology courses, focusing on experiments like Fluid Flow and Freeze Drying, enhancing comprehension of principles and applications.
- Prepared and maintained laboratory equipment, ensuring a safe and effective learning environment for more than 20 lab sessions.
- Evaluated student performance through lab reports and provided constructive feedback, improving students' learning
- Collaborated with the course instructor to develop instructional materials and improve laboratory sessions.

Research Assistant Oct 2021 - Jul 2022

The Hongkong Polytechnic University

- Assisted in conducting research on functional foods, particularly fungi polysaccharides and proteins, contributing to two published papers.
- Collected, analyzed, and interpreted data using advanced software like Prism and Origin, leading to a 30% increase in research accuracy.
- Ensured compliance with safety standards in the lab, maintaining a 100% safety record over 9 months.
- Prepared and maintained laboratory equipment, supporting over 15 research projects.

Researcher Sep 2016 - Feb 2021

University of Copenhagen

- Conducted photochemical studies on α -Lactalbumin aggregates, optimizing conditions to reduce amino acid loss.
- Developed and validated methods for identifying di-tyrosine crosslinks using Western Blot, LC-MS/MS
- Investigate photooxidation mechanisms, utilizing techniques like HPLC and GC.

- Presented research findings to partners such as Arla and Novo Nordisk, enhancing collaboration and knowledge exchange.

Laboratory Assistant Sep 2017 - Aug 2018
University of Copenhagen

- Maintained cleanliness and safety standards in the lab.
- Designed and executed experiments independently.
- Managed inventory efficiently, ensuring availability of necessary supplies and equipment.
- Trained new lab members, improving team productivity and knowledge sharing.

Volunteer Sep 2014 - Aug 2018
China Embassy in Denmark

- Classy and input document, etc.
- Taking charge of reception for visitor or navy from China.

Laboratory Assistant Intern Aug 2013 - Aug 2013
Heilongjiang Academy of Agricultural Sciences

- Assisted in pesticide residue analysis, contributing to research on agricultural product safety.
- Collaborated with senior researchers on toxin analysis, gaining hands-on experience in advanced lab techniques.
- Maintained lab equipment and organized data for research projects, ensuring accuracy and reliability.
- Participated in weekly team meetings to discuss progress and plan future experiments.

OTHER SKILLS

Software: GraphPad, Origin, Sigma Plot, ChemDraw, ImageLab, Lantetix, SPSS, R (basic), Microsoft Office 365

Experiment instruments: UHPLC, HPGPC, SEC, GC, LC-MS/MS, DLS, NanoDrop, IBLOT-2, SEM, FT-IR, CD

Skill certificate: Public Nutritionist (Level 3), Food inspection (Level 3), National Computer (Level II), National Mandarin (Level 2A)

Language: Chinese, English, Danish (PD1), Cantonese (basic)

CERTIFICATION

FSN Excellent Research Output Scholarship Dec 2024
Department of FSN at the Hongkong Polytechnic University

Best Poster Presentation Aug 2024
1st FSN Research Salon at the Hongkong Polytechnic University

FSN Three Minutes Thesis Competition 2nd runner up Jun 2024
Department of FSN at the Hongkong Polytechnic University

PolyU Research Postgraduate Scholarship Aug 2022
The Hongkong Polytechnic University

ShiPinJia Scholarship Excellence Award Nov 2020
Food plus smart food technology.

Scholarship from S.C.VAN FONDEN Aug 2019
S.C.VAN

Full scholarship for master study at the University of Copenhagen Sep 2014
China Scholarship Council

The 13th Challenge Cup National College Student Curricular Academic Science and Technology Works Competition, Excellent Award Apr 2013
Northeast Forestry University

National Scholarship (Estimated top 1% students) Nov 2011
Ministry of education of the People's Republic of China

Meng Niu Cup Food Innovation & Design Competition, 2nd Prize Oct 2011
Heilong Jiang Province

PUBLICATION LIST

1. **Zhao, Z. C.**, Gu, F. T., Li, J. H., Zhu, Y. Y., Huang, L. X., & Wu, J. Y. (2024). Fractionation, characterization, and assessment of nutritional and immunostimulatory protein-rich polysaccharide-protein complexes isolated from *Lentinula edodes* mushroom. *International Journal of Biological Macromolecules*, 136082.
 2. **Zhao, Z. C.**, Huang, L. X., Dong, X. L., & Wu, J. Y. (2024). Evaluation of Three-Phase Partitioning for Efficient and Simultaneous Isolation of Immunomodulatory Polysaccharides and Proteins from *Lentinula Edodes* Mushroom. *Food and Bioprocess Technology*, 1-15.
 3. **Zhao, Z.**, Li, R., Poojary, M. M., Nielsen, S. B., & Lund, M. N. (2021). Effect of Addition of Tryptophan on Aggregation of Apo- α -Lactalbumin Induced by UV-Light. *Foods*, 10(7), 1577.
 4. **Zhao, Z.**, Poojary, M. M.; Skibsted, L. H.; Lund, M. N. (2020). Cleavage of Disulfide Bonds in Cystine by UV-B Illumination Mediated by Tryptophan or Tyrosine as Photosensitizers. *Journal of Agriculture and Food Chemistry*. 68(25),6900-6909.
 5. **Zhao, Z.**, Engholm-Keller, K., Poojary, M. M., Boelt, S. G., Rogowska-Wrzesinska, A., Skibsted, L. H., ... & Lund, M. N. (2020). Generation of aggregates of α -lactalbumin by UV-B light exposure. *Journal of agricultural and food chemistry*, 68(24), 6701-6714.
 6. **Zhao, Z.**; Vavrusova, M.; & Skibsted, L. H. Antioxidant Activity and Calcium Binding of isomeric Hydroxybenzoates. *Journal of food and drug analysis*.2018, 26(2), 591-598.
 7. 赵梓辰. (2013). 浅谈我国食品安全管理. *现代企业教育*, (12), 326-326.
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8. Gu, F. T., Li, J. H., **Zhao, Z. C.**, Zhu, Y. Y., Huang, L. X., & Wu, J. Y. (2025). Metabolic outcomes of Cordyceps fungus and Goji plant polysaccharides during in vitro human fecal fermentation. *Carbohydrate Polymers*, 350, 123019.
 9. Huang, L. X., Gu, F. T., Zhu, Y. Y., **Zhao, Z. C.**, Li, J. H., & Wu, J. Y. (2024). Bifidogenic properties of polysaccharides isolated from mushroom *Lentinula edodes* and enhanced immunostimulatory activities through Bifidobacterial fermentation. *Food Bioscience*, 62, 105121.
 10. Zhu, Y. Y., Dong, Y. H., Gu, F. T., **Zhao, Z. C.**, Huang, L. X., Cheng, W. Y., & Wu, J. Y. (2024). Anti-Inflammatory Effects of Cordyceps Cs-HK1 Fungus Exopolysaccharide on Lipopolysaccharide-Stimulated Macrophages via the TLR4/MyD88/NF- κ B Pathway. *Nutrients*, 16(22), 3885.
 11. Li, J. H., Gu, F. T., Yang, Y., **Zhao, Z. C.**, Huang, L. X., Zhu, Y. Y., ... & Wu, J. Y. (2024). Simulated human digestion and fermentation of a high-molecular weight polysaccharide from *Lentinula edodes* mushroom and protective effects on intestinal barrier. *Carbohydrate Polymers*, 343, 122478.
 12. Nielsen, L. R.; Nielsen, S. B.; **Zhao, Z.**; Olsen, K.; Nielsen, J. H.; & Lund, M. N. (2018). Control of α -lactalbumin aggregation by modulation of temperature and concentration of calcium and cysteine. *Journal of agricultural and food chemistry*, 66(27), 7110-7120.
 13. 徐冰心, 王婷婷, 赵梓辰, 张惠玲, & 刘敦华. (2017). 松仁蛋白的研究进展. *安徽农业科学*, 45(33), 81-82.
 14. 张智, 刘东敏, 徐冰心, 胡俊飞, 刘奇, 国勇, 梁卓然, 卢香泥, 赵梓辰, 王振宇. (2015). 桔草芽孢杆菌 Bs-07 液态发酵提高黑木耳多糖抗凝血功能. *东南大学学报: 英文版*, 31(1), 143-148.
 15. 林秀芳, 吴晓红, 赵梓辰, 徐冰心, 高小棠, & 刘敏. (2014). 松仁蛋白酶解液体外抗氧化活性分析. *CHINA OILS AND FATS*, 39(11).
 16. 徐冰心, 刘敏, 林秀芳, 赵梓辰, 高小棠, & 吴晓红. (2013). 胃蛋白酶水解松仁蛋白的研究. *安徽农业科学*, 6, 121.

REFERENCES

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