Dr. Fusheng Chen

Secondary post professor of Huazhong Agricultural University

- Head of Hubei International Scientific and Technological Cooperation Base of Traditional Fermented Foods
- Vice-head of Key Laboratory of Environment Correlative Dietology, MOE, China
- Vice-chairman of Council of The Bio-toxin Association of China
- Leading Talents of Taishan Industry in Shandong Province

Research Fields and Directions

I lead Food Biotechnology and Food Safety Laboratory of Huazhong Agricultural University (fbfs.hzau.edu.cn) to carry out long-term researches on the applications of beneficial food microorganisms, the control of harmful food microorganisms and the basis of their molecular biology, including three stable research directions: food fermentation, food safety and food microbial molecular biology.

In terms of food fermentation: In the laboratory**,** systematic studies have been carried out on traditional fermented foods with Chinese characteristics, such as red koji and cereal vinegar. More than 1000 strains including acetic acid bacteria and all reported strains of *Monascus* have been collected and preserved; and many fermented foods such as cereal vinegars rich in phenyllactic acid and other healthy components, red koji without citrinin, and so on have been developed.

In terms of food safety: In the laboratory, modern enzymology, immunology and molecular biology have been introduced into food safety rapid detection earlier in China. In view of the issues existing in the rapid detection method of cholinesterase for organophosphorus and carbamate pesticide residues, we successfully solved problems such as the rapid extraction of cholinesterase, product standardization and false positive test results, and all research results have been industrialized. Monoclonal antibodies against aflatoxin B1(AFB1) and other common fungal toxins were obtained, a high-throughput, rapid detection kit for AFB1 was developed, and the molecular tracing technologies of foodborne pathogens and the methods of detecting and controlling foodborne pathogens by phages have been also established.

In terms of food microbial molecular biology: We have systematically investigated the molecular biology of *Monascus*, a Chinese traditional fermentation microorganism, earlier in China; completed the genome sequencing and analyzed 10 representative strains of *Monascus*; explored the regulation mechanism of secondary metabolites of *Monascus* by epigenetic methods; successfully analyzed the biosynthesis pathway of *Monascus* pigments and citrinin and the molecular mechanism of *Monascus* pigments diversity; systematically studied the effects of light and magnetic fields on *Monascus* and the related molecular mechanism. In addition, the acid resistance mechanisms of acetic acid bacteria and the molecular mechanism of interaction between *Saccharomyces cerevisiae* and non-*Saccharomyces cerevisiae* were well researched.

Main Achievements

Over the past 20 years, won more than 50 research projects at various levels including two key projects of national natural science fund, published more than 200 research papers, established stable and good cooperative relationship with more than 10 famous universities such as University of Copenhagen in Denmark and well-known domestic enterprises such as Shanxi Aged Vinegar Group, Zhenjiang Hengshun Vinegar Industry Group; Won 5 science and technology awards including the first prize of Hubei Science and Technology Progress Award.

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