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Occurrence, impact and biocontrol of biogenic amines in fermented soybean foods

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Microbial fermentation is one of the oldest and practical technologies in food processing and preservation. However, fermentation of protein-rich raw materials such as fish, meat and soybean commonly provides abundant precursors of biogenic amines which cause various intoxication symptoms in human. In Asian countries fermented soybean foods have been widely consumed as they are or utilized in a variety of processed foods. But then again, the safety issues of fermented soybean foods have here to fore been over looked because human ancestors have taken these foods for centuries. Even though fermented soybean foods are believed to have significant health-promoting effects, it is critically important to monitor and reduce levels of biogenic amines in the foods because they contain not only abundant dietary amino acid precursors of biogenic amines but also various biogenic amine-producing and fermenting microorganisms. According to reports on biogenic amines, the amounts of biogenic amines in most fermented soybean foods are within the safe levels for human consumption. It is noteworthy, however, that several types of these foods have the contents of vaso active biogenic amine greater than toxic dose of each amine. Therefore, it is also important to understand why there are differences in the contents and diversity of biogenic amines between types or individual batches of fermented soybean foods. Possible reasons are divided into three aspects: The ratio of ingredients used in raw material, microbial and/or physicochemical contribution and conditions and periods of the entire food supply chain. Thus, several biocontrol strategies have been developed for reducing biogenic amine formation in the fermented foods mainly focusing on microbial intervention.

Biography

Jae-Hyung Mah has completed his PhD from Korea University and Postdoctoral studies from University of Wisconsin-Madison and Washington State University. He is the Professor and Department Chair of Food and Biotechnology at Korea University. He has published more than 40 papers in reputed journals and has been serving as an Editorial Board Member of several peer-reviewed journals. His researches focus on the analyses of hazardous chemicals and micro organisms in fermented foods and development of novel protective and preservative strategies such as application of genetically designed starter culture to food fermentation and inactivation kinetics of pathogenic microorganisms exposed to intervention treatments.

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