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BIOGENIC AMINES IN *PA* KIMCHI, A KOREAN KIMCHI MADE OF GREEN ONION

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Kimchi is a group of Korean traditional fermented vegetables, which includes *Pa* (green onion) kimchi made of green onion. The green onion that is known as one of the main ingredients used for the preparation of various types of kimchi and contains anti-bacterial sulfur-compounds resulting in delay of the growth of harmful bacteria, serves as the main material of *Pa* kimchi. Lactic acid bacteria (LAB), other important components of kimchi fermentation, contribute to the bio preservation of kimchi but may produce biogenic amines (BA) during the fermentation, posing potential safety risks. This study was conducted to evaluate BA related risks by measuring BA content in *Pa* kimchi samples and assessing bacterial contribution to the BA content. Total BA content of the samples did not reach the recommended safety limit 1,000 mg/kg for food. On the contrary, relatively high levels of vasoactive (histamine and tyramine) and putrefactive (putrescine and cadaverine) amines were detected in less ripened *Pa* kimchi samples, reaching the toxic thresholds of respective BA. Meanwhile, of the 99 LAB strains isolated from *Pa* kimchi samples, 16 strains significantly produced BA in independent *in vitro* assays, 14 and two strains were identified as *L. brevis* and *L. sakei*, respectively, through 16s rRNA sequencing. Therefore, it was assumed that *L. brevis* could be responsible for BA formation in

Pa kimchi. In addition, there appeared to be negative correlations between BA content (viz., vasoactive and putrefactive amines) and acidity (an indicator of kimchi ripening) of *Pa* kimchi samples. The results suggest that BA-related risks decrease as *Pa* kimchi ripening progresses. The relationship between the successive change of microbial communities and BA in kimchi needs to be further investigated to reduce BA formation.

Biography

Jae-Hyung Mah completed his PhD from Korea University, South Korea and Postdoctoral studies from University of Wisconsin-Madison and Washington State University, USA. He is a Professor of Food and Biotechnology at Korea University, South Korea. He published about 50 papers in reputed journals and has been serving as an Editor-In-Chief, Editorial Board Member and Referee for several peer-reviewed journals in Food Science and Technology. His researches focus on the analyses of hazardous chemicals and microorganisms in fermented foods, development of novel protective and preservative strategies such as application of genetically designed starter culture to food fermentation and mathematical model studies on inactivation kinetics of food borne pathogenic and spoilage microorganisms exposed to chemical, physical and biological intervention treatments.

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