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Exploring the core functional microbiota related to the flavor compounds present in the production of a naturally fermented plain sufu (Chinese fermented soybean curd) by multivariate statistical analyses

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Sufu is a solid-state fermented soybean curd with strong flavored and soft, creamy texture. Its production process generally includes several stages, namely, the production of sufu, preparation of pehtze, salting, and aging. The dynamic changes of physicochemical parameters, flavor compounds (17 free amino acids, 21 fatty acids, and 14 volatiles), and microbiota profiles, and their

correlations involved in the production were explored. Results from the principal component analysis, multiple factor analysis, and partial least squares-discrimination analysis showed that these properties varied significantly at different stages of the production of plain sufu. Furthermore, based on Pearson correlation coefficients (r) and variable importance for predictive components (VIP) values between the microbiota profiles and flavor compounds, nine bacterial and six fungal genera were identified as core functional microbiota significantly affecting the production of flavor compound especially in the production of free amino acids. Microorganisms belonging to the genus *Lactobacillus*, *Tetragenococcus*, *Candida*, *Debaryomyces*, and *Actinomuor* were positively correlated with the production of both taste and odorous

compounds. But, two bacterial genera (*Bacillus*, *Weissella*) and two fungal genera (*Alternaria* and *Fusarium*) were identified to have a significantly negative correlation which may be used as indicators of microbial contamination in the production of natural plain sufu. The variance and similarity of the flavor compounds and microbiota profiles among different production stages samples, as well as, the correlation between flavor compounds and microbiota will help to understand of the mechanism of plain sufu production and further to enhance the quality control of plain sufu products.

Biography

Wenmeng He is a PhD student at the Chinese University of Hong Kong. Her major is in Food and Nutritional Sciences. Hau Yin Chung, is an Associate Professor at the Chinese University of Hong Kong. His research focus is in Food Science.

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