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Multivariate correlations among the activities of the major enzyme groups, core functional microbiota and the flavor compounds present at different production stages of the naturally fermented plain sufu (Chinese fermented soybean curd)

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Sufu is a solid-state fermented soybean curd with strong flavor and soft, creamy texture. Its major production steps generally include the production of tofu, preparation of pehtze, salting, and aging. During the production of the naturally fermented plain sufu, dynamic changes of its physicochemical parameters, flavor compounds, major enzyme groups,

microbiota profiles, and their correlations were explored. Results from the multivariate statistical analysis showed that samples from different stages were discriminated and grouped into three clusters. Both protease and esterase had a strong positive correlation with some targeted volatile compounds, particularly, three high molecular weight esters including ethyl dodecanoate, ethyl (Z)-9-octadecenoate and ethyl (Z, Z)-9,12-octadecadienoate. Furthermore, nine bacterial and six fungal genera were identified as core functional microbiota significantly affecting the production of flavor compounds especially in the production of free amino acids. Microorganisms belonging to the *genus* *Lactobacillus*, *Tetragenococcus*, *Candida*, *Debaryomyces*, and *Actinomucor* were positively correlated with the production of both taste and odorous compounds. But, two bacterial

genera (*Bacillus*, and *Weissella*) and two fungal genera (*Alternaria*, and *Fusarium*) were identified to have significantly negative correlation which may be used as indicators of microbial contamination in the production of naturally fermented plain sufu. The variation and similarity of the flavor compounds and microbiota profiles at different production stages, as well as, the correlation between flavor compounds and microbiota will facilitate the understanding of the mechanism during the plain sufu production and further enhancing the quality control of the products.

Biography

Wenmeng He is a Ph.D. student at the Chinese University of Hong Kong. Her major is Food & 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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