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Recreation of Korean Traditional *Nuruk* and the Analysis of Metabolomic Characteristics

Jang Eun Lee[1,2] and Jae Ho Kim[3*]

[1]*Traditional Alcoholic Beverages Research Team, Korea Food Research Institute, Seongnam, Korea*

[2]*Department of Food Biotechnology, University of Science and Technology, Daejeon, Korea*

[3]*SME Solution Center, Korea Food Research Institute, Seongnam, Korea*

Korean traditional *Nuruk* has been developed with various materials and shapes according to geographical environments and climates of their origins. *Nuruk* is also known as *kokja* in Korea, reflecting the understanding that microorganisms such as wild fungi, yeasts, and lactobacillus bacteria are naturally inoculated and reproduced. The objective of this study is to identify the characteristics of traditional *Nuruk* through recreating traditional production methods detailed in ancient Korean documents. In the present study, a total of 58 different kinds of Korean traditional *Nuruk* were prepared, including 46 kinds of recreated products. Each *Nuruk* sample was evaluated for its enzymatic activities, including glucoamylase, protease, and glucanase. Their suitability for alcoholic beverage production were compared to each other. To isolate valuable microorganisms from *Nuruk* samples, alcoholic beverages produced using each sample were subjected to sensory evaluation to determine their taste. In addition, metabolite changes in traditional alcoholic beverages fermented with different kinds of *Nuruk* were analyzed through mass-based metabolomics approach. This study presents, for the first time, the traditional production methods written in ancient Korean documents using workable production methods supported by modern technologies. In addition, this study analyzed the characteristics of reproduced *Nuruk*. It could be utilized as a basis for studying traditional Korean traditional alcoholic beverages and their valuable microorganisms.