

## 천연물 연구에서의 메타볼로믹스

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### Metabolomics in Natural Products Research

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Metabolomics is the study of global metabolite profiles in a system (cell, tissue, or organism) under a given set of conditions. Metabolomics has its roots in early metabolite profiling studies but is now a rapidly expanding area of scientific research in its own right. In this study, the applications of metabolomics in natural product studies are explored. Ginseng is a well-known herbal medicine and has various pharmacological effects, which include antiaging, anticancer, antifatigue, memory enhancing, immunomodulatory, and stress reducing effects. Metabolomic analysis of organic acids has not been performed for evaluation whether ginseng has been cultivated using conventional or environmental-friendly farming methods. In this study, profiling analysis was conducted for organic acids (OAs) in ginseng roots produced using conventional or environmentfriendly farming methods at five locations in each of five regions. In OA profiles, lactic acid was the most abundant OA in all regions, with the exception for environmentally friendly farmed ginseng in two of the five regions, in which glycolic acid was most abundant OA. OA profiles in all regions showed isocitric acid levels were increased by environment-friendly cultivation, which suggests metabolic differences associated from farming method, and that isocitric acid might be a useful discriminatory biomarker of environmental-friendly and conventional cultivation. The results of the present study suggest metabolomic studies of OAs in ginseng roots might be useful for monitoring whether ginseng has been cultivated using conventional or environmentally friendly farming methods.

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