

Comparisons of Metabolites Identified from *Platycodon grandiflorum* and *Codonopsis lanceolata*

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[Introduction]

The roots of *P. grandiflorum* and *C. lanceolata* have been used as an herbal drug for the treatment of bronchitis, cough, spasm, inflammation, and as an edible plant in Korea. Coupling to HR-GC/TOF-MS offers high mass resolution, high mass accuracy, and fast scan speeds. Applications of HR-GC/TOF are useful in various fields such as analysis of human serum and plant samples. The analytical method enables a good statistical separation and facilitates the identification of differences or similarities between groups. In this study, the comparative analysis of metabolites between *P. grandiflorum* and *C. lanceolata* was performed using HR-GC/TOF-MS.

[Materials and Methods]

HR-GC/TOF MS analyses were performed on a GCT premier (Waters, Manchester, UK) using a 7890A gas chromatograph (Agilent Technologies, Palo Alto, CA, USA) with DB-5 MS column (30 m × 0.25 mm I.D., 0.25- μ m film, J&W Scientific). The mass spectra of all detected compounds were compared with the mass spectra in the National Institute of Standards and Technology mass spectral library (National Institute of Standards and Technology (NIST) MS search 2.0). All the samples were run in triplicate for reproducibility and stability assessment of the GC/TOF-MS system throughout the experiment.

[Results and Discussions]

We conducted metabolite profiling of between *C. lanceolata* and *P. grandiflorum* samples using GC/TOF MS to examine differences. Moreover, multivariate analysis showed that important markers were shown for characterizing two *C. lanceolata* and *P. grandiflorum* species. The extract of *C. lanceolata* sample, amino acids were more contained than *P. grandiflorum* sample in comparison with organic acids and sugars. The approach showed significant differences between *C. lanceolata* and *P. grandiflorum* samples. In addition, *C. lanceolata* and *P. grandiflorum* are medicinal plants belonging to the same family Campanulaceae and have similar pharmacological functions, but this experiment confirmed that there is a difference in metabolic material properties between the two plants.

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