

Widely targeted metabolomics profiling of methanolic extracts from roots and leaves of *Pteris vittata* L

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Abstract

Statement of the Problem: *Pteris vittata* L., a common fern known as 'Chinese Brake Fern', is native from China and widespread all over the world including Vietnam. It received much attentions in recent years because it was known to be a hyperaccumulator plant of arsenic used in phytoremediation. It is also widely used in traditional Chinese medicine for diverse therapeutic applications, such as the treatment of influenza, dysentery, rheumatism, injury and scabies. Previous qualitative phytochemical screening studies on *P. vittata* have showed the presence of flavonoids, tannins, resins, glycosides and triterpenoids groups in the crude extract of this species. However, it still attracts little attention on its chemical constituents or bioactivities recently. Hence, we attempt to obtain complete metabolite profiling of *P. vittata* to provide more information about its chemical constituents in this experiment. Methodology & Theoretical Orientation: Widely targeted metabolomics which is an innovative high-throughput analysis to extend plant metabolites detection based on the optimal single reaction monitoring conditions in triple quadrupole mass spectrometry of thousands authentic compounds in the library, and thus to relative quantify their levels in samples. This sensitive method was applied for 35 root extracts and 35 aerial part methanolic extracts of *P.vittata*. Findings: In total, 396 metabolites were identified over the limit of detection including 263 primary metabolites and 133 secondary metabolites. Noticeably, the large amount of flavonoids (74), cinnamic acids and derivatives (13), benzoic acids and derivatives (8), coumarins (5), stilbenoids (2), and other phenols (8) change radically our view of this title plant

metabolite profile and potentially contributes to the pharmacological activity of *P. vittata* extracts. Conclusion & Significance: Metabolite profiles of *P. vittata* which has been reported for the first time can provide comprehensive information for the quality evaluation and further exploitation potential of the plants under study.

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