

Quantification of Polyacetylenes in Apiaceous Plants by High-Performance Liquid Chromatography Coupled with Diode Array Detection

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Polyacetylenes are known for their biofunctional properties in a wide range of organisms. In the present study, the most frequently occurring polyacetylenes, *i.e.* faltarinol, faltarindiol, and faltarindiol-3-acetate, were determined in six genera of the Apiaceae family. For this purpose, a straightforward and reliable method for the screening and quantification of the polyacetylenes using high-performance liquid chromatography coupled with diode array and mass spectrometric detection without tedious sample clean-up has been developed. Peak assignment was based on retention times, UV spectra, and mass spectral data. Quantification was carried out using calibration curves of authentic standards isolated from turnip-rooted parsley and *Ligusticum mutellina*, respectively. The references were unambiguously identified by Fourier transform-IR (FT-IR) spectroscopy, GC-MS, HPLC-MSⁿ in the positive ionization mode, and ¹H NMR and ¹³C NMR spectroscopy. To the best of our knowledge, the occurrence of faltarindiol-3-acetate in *Anthriscus sylvestris* and *Pastinaca sativa* has been reported for the first time. The data revealed great differences in the polyacetylene contents and varying proportions of individual compounds in the storage roots of Apiaceous plants. The results of the present study may be used as a suitable tool for authenticity control and applied to identify novel sources devoid or particularly rich in polyacetylenes, thus facilitating breeding programs for the selective enrichment and depletion of these plant secondary metabolites, respectively.

Key words: Apiaceae, Polyacetylenes, High-Performance Liquid Chromatography