

HPLC Separation of Glucosinolates from Leaves and Seeds of *Arabidopsis thaliana* and Their Identification Using Thermospray Liquid Chromatography/Mass Spectrometry

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Abstract

Leaf and seed extracts of *Arabidopsis thaliana* var. Columbia contain a large number of glucosinolates, representing close to 25% of those known to occur in nature. The glucosinolates, in the form of their desulphated analogs, are separated by reversed-phase, high-performance liquid chromatography (HPLC). Seventeen are identified using thermospray liquid chromatography/mass spectrometry (TSP LC/MS). Additional glucosinolates, present in trace amounts, are identified as isothiocyanates by electron impact and chemical ionization gas chromatography/MS (GC/MS). In total, 23 glucosinolates are detected and these include four series of homologs and analogs. Fifteen possess aliphatic side chains, of which six contain ω -methylthioalkyl and six contain ω -methylsulphinylalkyl side chains; eight possess aromatic side chains, of which four constitute an homologous series of benzoic acid esters and three possess 3-indolylmethyl-based structures. Sixteen of the glucosinolates are detected in *Arabidopsis thaliana* for the first time and three of these, 4-hydroxybutyl glucosinolate, 5-benzoyloxypropyl glucosinolate, and 6-benzoyloxyhexyl glucosinolate, represent novel plant constituents.