

Abstract

Data dependent RP-HPLC/ESI-MS² methods have been developed for the analysis of monogalactosyldiacylglycerols (MGDGs) and digalactosyldiacylglycerols (DGDGs). The methods allow the efficient separation of non-oxidised and oxidised galactolipids and their unambiguous characterisation based on their collision induced dissociation (CID) and exact mass measurement. The optimised reversed-phase chromatographic systems are based on a 2.0 mm i.d. Nucleosil C18 column and methanol/water (MGDGs) or acetonitrile/methanol/water (DGDGs) gradients. The oxidised galactolipids eluted before the non-oxidised ones and the retention order of the non-oxidised species was found to follow the equivalent carbon number. The use of exact mass measurement MS was demonstrated to be essential for distinguishing the mass spectra of the oxidised and non-oxidised species and thus for their correct interpretation. The methods were applied for the characterisation of the MGDGs and DGDGs in the leaves of *Arabidopsis thaliana* and *Melissa officinalis*.