

WEDNESDAY

KN4 Rising to the metabolomics challenge: new LC-MS/MS approaches

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urine, plant metabolites, hydrophilic interaction liquid chromatography, porous graphitic carbon

HILIC and PGC LC-MS/MS methods have been developed and used in metabolomics studies

Reversed phase (RP) chromatography is an established approach in mass spectrometry-based metabolomics. However, the majority of biofluids are aqueous and thus likely to contain a wide range of polar compounds; these are poorly retained on RP stationary phases. Normal phase separations have traditionally suffered from poor reproducibility and separation efficiencies and tend to use eluents that are not readily compatible with mass spectrometry.

We have therefore developed alternative LC-MS approaches for use in metabolomics. Porous graphitic carbon (PGC) and hydrophilic interaction liquid chromatography (HILIC) columns allow the use of mass spectrometry-friendly buffers without the need for ion-pairing reagents. We have developed on-line PGC LC-MS/MS methods for the analysis of neutral water soluble oligosaccharides from wheat stems [1], simultaneous targeted quantitation of glycolytic intermediates, sugars and sugar phosphates from *A. thaliana* tissues [2], and to detect small alterations in carbohydrate levels in the stems of lupins on water deficit [3]. ZIC-HILIC columns offer an alternative approach we have developed for the analysis of urine [4] and neutral and charged plant metabolites [5].

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