Application Note SI-01347

Determination of 80 Pesticides in Vegetables using LC/MS/MS

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With the demand from consumers for residue free foods; the requirement to meet lower statutory maximum residue levels (MRLs); and, the pressures placed on the food supply chain by the 'Global Marketplace', there has never been a greater need for accurate, sensitive and rapid methods to monitor pesticide residues in foods. The analysis of multi-class pesticide residues in fruit and vegetable samples can be performed with a high degree of confidence in compound identity using targeted Multiple Reaction Monitoring (MRM) and MS/MS. The data shown here illustrates the selectivity provided by Varian's 320-MS Triple Quadrupole Mass Spectrometer in MRM mode. Co-eluting compounds are well separated with excellent quantification and sensitivity. The Polaris™ 3 µm C18-A column provides good peak shapes with a minimum amount of peak tailing. In combination with the QuEChERS sample preparation method, the procedure has been validated for use in a wide range of crop matrices and is suitable for the routine monitoring of pesticides at or below UK/EU MRLs.

LC/MS/MS Conditions

Column: Polaris 3 µm C18-A, 150 x 2 mm (pn: A2001150x020) at 40 °C
Interface: Electrospray ionization, +/- Ion Mode
Nebulizer Gas: Nitrogen
Collision Gas: Argon
Flow Rate: 200 µL/min
Injector: Varian ProStar™ 410 Autosampler
Injection Volume: 50 µL. partial loop fill
Pumps: Varian 212 Solvent Delivery Module
Eluting Solvents:
Solvent A: 5 mM Ammonium formate - in 0.1 % formic acid w/v
Solvent B: Acetonitrile:methanol, 3:1 v/v
Detection: Varian 320-MS Triple Quadrupole Mass Spectrometer

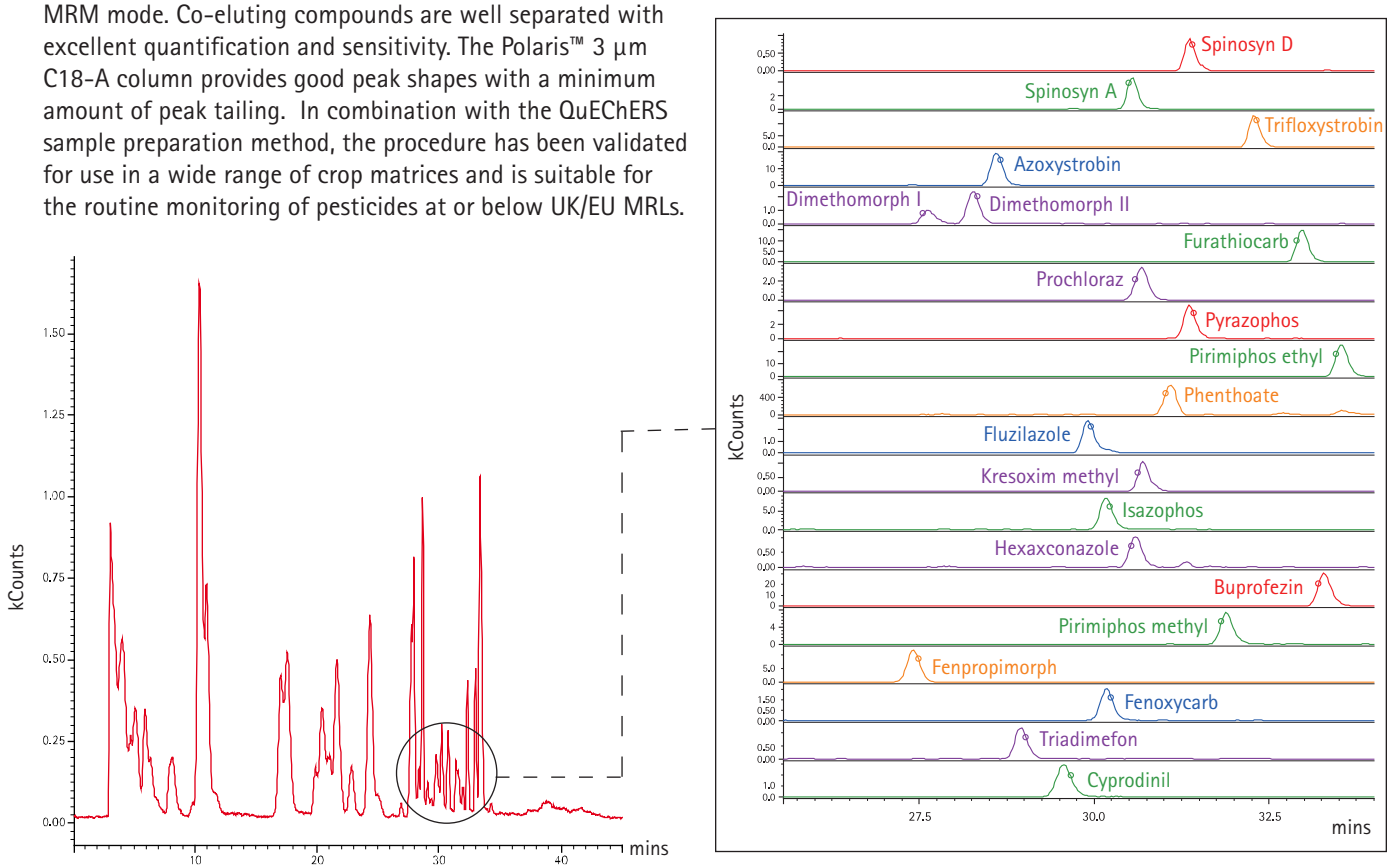

Figure 1. Extract of spinach matrix fortified with 80 pesticides at 100 µg/kg using the QuEChERS method.

These data represent typical results.
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