

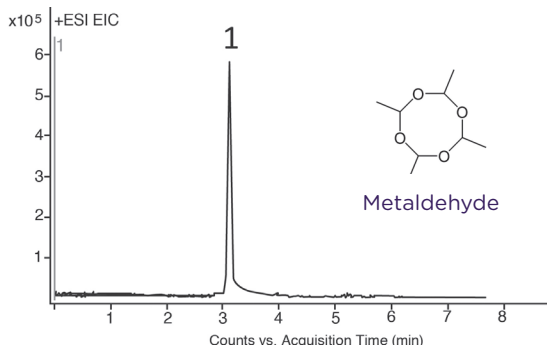
Applications of Cogent TYPE-C™ Columns

Environmental Applications

For many other Environmental applications go to www.mtc-usa.com and click on Knowledge Base.

Metaldehyde in Slug Pellets by RP LC-MS

Figure 70.



Method Conditions

Column: Cogent Bidentate C18 2.0™, 2.2µm, 120Å

Catalog No.: 40218-05P-2

Dimensions: 2.1 x 50mm

Mobile Phase:

A: DI H₂O / 0.1% formic acid

B: Acetonitrile/ 0.1% formic acid

Gradient: time (min.)	%B
0	10
3	100
6	100
7	10

Post Time: 3 min

Injection vol.: 1µL

Flow rate: 0.4mL/min

Detection: ESI - POS - Agilent 6210 MSD TOF mass spectrometer

Sample: Slug pellets were ground (3.25% metaldehyde) and 800mg was transferred to a 25mL volumetric flask. A portion of 50/50 solvent A/solvent B diluent was added and the flask was sonicated 10min. Then it was diluted to mark, mixed thoroughly, and filtered with a 0.45µm nylon syringe filter (MicroSolv Tech. Corp.).

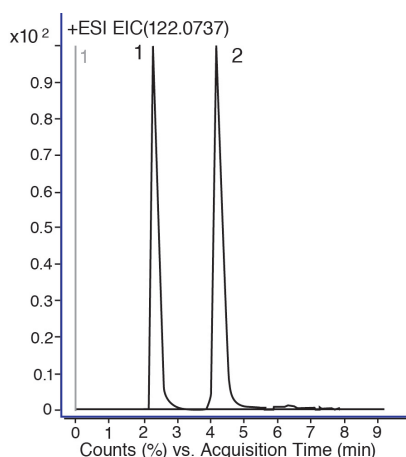
Peak: 1. Metaldehyde (177.1121m/z)

Discussion

As it has no double bonds, metaldehyde is a non-UV absorbing compound. Therefore other detection methods need to be investigated besides conventional UV-HPLC. LC-MS was found to be well-suited to its analysis by searching for the EIC corresponding to the [M+H]⁺ ion. Good retention and peak shape were observed for this analyte using the Cogent Bidentate C18 2.0™ column.

Chlormequat and Mepiquat Plant Growth Regulators

Figure 71.



Method Conditions

Column: Cogent Diamond Hydride™, 4µm, 100Å

Catalog No.: 70000-15P-2

Dimensions: 2.1 x 150mm

Mobile Phase: A: DI water + 20mm

ammonium acetate, pH

adjusted to pH 3.3 with

formic acid

B: Acetonitrile

Mobile Phase: 70% A

Post Time: 5 min

Flow rate: 0.5mL/min

Detection: ESI - pos. - Agilent 6210 MSD TOF mass spectrometer. CQ and MQ are already charged in solution and under ESI conditions the mass spectra show abundant molecular ion (M)⁺.

Sample Peaks:

1. Chlormequat (CQ) 122.0737m/z (M)⁺

2. Mepiquat (MQ) 114.1277m/z (M)⁺

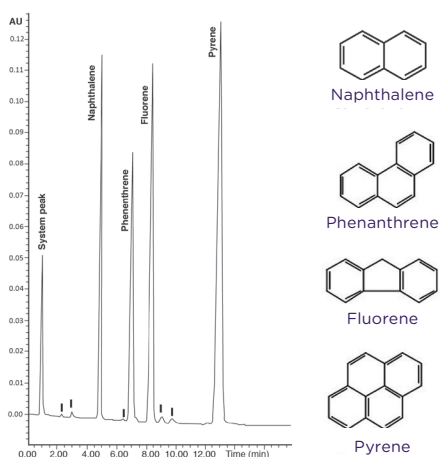
Samples for injection were diluted 1:1000 in the mobile phase.

Discussion

This note shows a new, sensitive and selective LC-MS method with low ionic strength mobile phase for the analysis of CQ and MQ residues. The method can be used in analysis of many samples including food. The selectivity and sensitivity of the method can be increased by using LC-MS-MS instruments and adequate product ions (CQ 122m/z to 58m/z and 63m/z, MQ 114m/z to 98m/z and 58m/z).

Polycyclic Aromatic Hydrocarbons

Figure 72.



Method Conditions

Column: Cogent Bidentate C18™, 4µm, 100Å

Catalog No.: 40018-75P

Dimensions: 4.6 x 75mm

Mobile Phase: Acetonitrile/DI Water 70:30

Injection vol.: 1µL

Flow rate: 0.5mL/min

Detection: UV at 254nm

Samples: 1. Naphthalene

2. Phenanthrene

3. Fluorene

4. Pyrene

1. Impurities or decomposition products 1mg of each sample was dissolved in 1mL of the mobile phase.