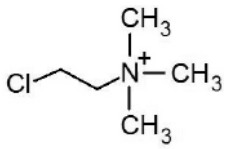
APPLICATION NOTES

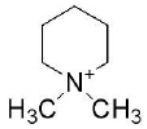
Cogent™ Diamond-Hydride

HPLC
ANP

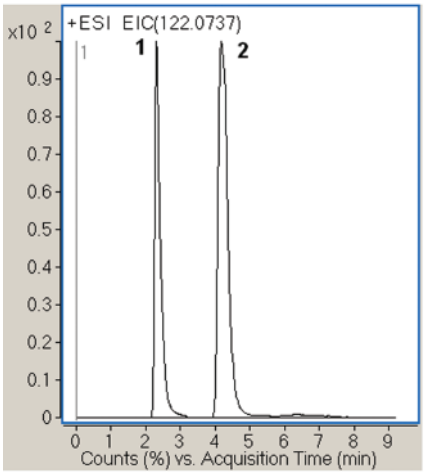
Chlormequat & Mepiquat
Plant Growth Regulators



1. Chlormequat



2. Mepiquat



Notes:
Chlormequat and mepiquat are quaternary ammonium compounds (quats) which are used as plant growth control regulators to reduce unwanted shoot growth without lowering plant productivity. CQ and MQ are used on fruits, vegetables and on food crops, which are used for making cereals. The compounds are considered by World Health Organization (WHO) as hazardous and their maximum residue levels (MRLs) have been established and regulated. For example in cereals, MRLs range from 0.5 to 5 mg per kg for both compounds.

Method Conditions

Column: Cogent Diamond Hydride™ 4µm, 100Å.
Catalog No.: 70000-15P-2
Dimensions: 2.1x150mm
Solvents: A: DI water + 20 mM ammonium acetate, pH adjusted to pH 3.3 with formic acid
B: Acetonitrile
Mobile Phase: 70%A
Post Tme: 5 min
Flow Rate: 0.5 mL/min.
Sample Peaks: 1. Chlormequat (CQ) 122.0737 m/z (M)+
2. Mepiquat (MQ) 114.1277 m/z (M)+
Sample stock solutions were purchased from Sigma. Samples for injection were diluted 1:1000 in the mobile phase.
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)+.

Discussion

Analysis of CQ and MQ can be challenging since they are extremely hydrophilic and are only weakly retained in reversed-phase HPLC which makes their separation impossible. In addition these compounds are retained too strongly in normal phase (non polar solvents) chromatography Due to this situation the preferred method of analysis for these compounds was ion-pair chromatography using high ionic strength (> 150 mM) ion-pair reagents. Buffers used are at very high concentration which makes coupling with MS very difficult if not impossible (source contamination). 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 instrument and adequate product ions (CQ 122 m/z to 58 m/z and 63 m/z, MQ 114m/z to 98 m/z and 58 m/z). This method has high repeatability (precision) and reliability of the results.

For more information visit www.MTC-USA.com

Cat. No.	Description
70000-15P-2	Cogent Diamond Hydride™ HPLC Column, 100Å, 4µm, 2.1x150mm

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