Comparison of liquid chromatography columns for the quantification of glyphosate, glufosinate and AMPA using LC-UV-MSMS – NUCLEOSHELL® RP 18

Method:	Matrix	Application-No.:
HPLC		126110

Substances: glufosinate; glyphosate; AMPA

Column: EC 100/2 NUCLEOSHELL® RP 18, 2.7 µm

Phase: NUCLEOSHELL® RP 18

REF number: 763134.20

Sample pretreatment:
A solution containing glyphosate (500 ng/mL), AMPA (500 ng/mL) and glufosinate (50.0 ng/mL) was prepared in ultrapure water.
Volume of 500 µL of sodium tetraborate (5 % in ultrapure water) and 500 µL of 10 mg/mL FMOC (Fluorenylmethyloxycarbonyl chloride) in acetonitrile were added to 500 µL of analytes solution to achieve derivatization of compounds.
The solution obtained was shaken for 1 hour protected from light at room temperature and then centrifuged. Final concentrations of the compounds were 167 ng/mL for glyphosate and AMPA, and 16.7 ng/mL for glufosinate.

Conditions:
Eluent A: 50 mmol/L ammonium acetate
Eluent B: acetonitrile
Gradient: 5-50 % B in 3.7 min, 50-95 % B in 0.6 min, 95 % B for 2.0 min, 95-5 % B in 0.5 min, 5 % B for 2 min
Flow rate: 0.5 mL/min
Temperature: 30 °C
Injection volume: 5 µL

Detection:
LC-UV-MS/MS
Mode: ESI+
Transition: glufosinate-FMOC: 404.1 > 136.1; glyphosate-FMOC: 392.1 > 88.1; AMPA-FMOC: 334.1 > 179.1
Note: To avoid overload of mass spectrometer with FMOC, the mobile phase was directed to waste after last compound was detected (FMOC: UV, 254 nm).

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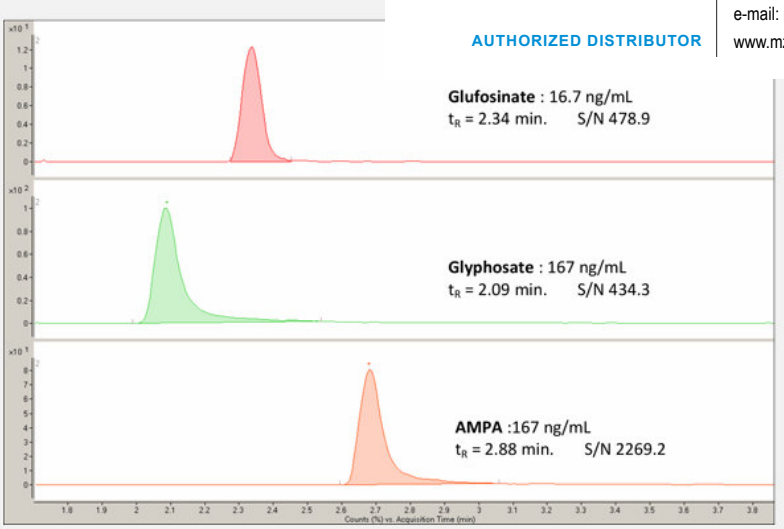
Source: KUDZU SCIENCE, Illkirch Cedex, France (2012)

Keywords: pesticides; phosphonic amino acid herbicides; core-shell

Chromatogram:



Note:
A determination with NUCLEODUR® C_{18} HTec is shown with Appl. No. 126090 and with NUCLEODUR® C_{18} Pyramid with Appl. No. 126100.
The comparison of the colums shows an excellent peak shape with NUCLEOSHELL® RP 18. This application can be easily adapted to be used with classical HPLC systems with maximum pressure tolerance less than 400 bars.