ENDOCRINE DISRUPTORS

Emerging Contaminant of Concern

Emerging evidence from wildlife and laboratory studies indicates that some chemicals may interfere with the endocrine system. Compounds identified as endocrine-disrupting chemicals (EDCs) include pesticides, polychlorinated biphenyls (PCBs), dioxins, furans, alkylphenols, and steroid hormones.

HPLC CONDITIONS

Instrument:	Waters Alliance® 2690 HPLC system				
Mobile Phase A:	Methanol				
Mobile Phase B:	Water				
Column:	Waters SunFire™ C ₁₈ , 3.5 µm, 2.1 x 50 mm				
Flow rate:	0.2 mL/min				
Injection volume:	20 µL				
Gradient:	Time 0	60% A; 40% B			
	Time 10 min	100% A			
	Time 18 min	100% A			
	Time 20 min	60% A; 40% B			
	Time 23 min	60% A; 40% B			

SAMPLE PREPARATION

Method for Oasis HLB, 3 cc, 60 mg Waters Oasis® HLB (60 mg)



MS CONDITIONS

A Waters Quattro micro[™] triple quadrupole mass spectrometer was operated in the negative ion electrospray mode. Nitrogen gas, at a flow rate of 450 L/hr and a temperature of 250 °C, was used for spray desolvation. The source temperature was maintained at 120 °C and the capillary voltage was 3.2 kV. RE-DISSOLUTION: 500 μL (50:50, v/v, acetonitrile/ ammonium formate buffer pH 3.0)

Compound	Fw	Precursor Ion m/z	Product lons m/z	Corresponding structure of product ions	Cone Voltage (V)	Collision Energy (eV)
Estriol	288.4	287.3	144.9; 171.1	[M - C8H14O2] -; [M - C6H12O2]	50	40
Bisphenol A	228.3	227.2	133.0; 210.8	[M - C6H60]-	37	33
17α-Ethinylestradiol	296.4	295.5	145.1; 199.5	[M - C10H140]-; [M - C6H90]-	37	49
17α-Estradiol	272.4	271.3	145.2; 183.1	[M - C10H140]-; [M - C5H120]-	37	45
17β-Estradiol	272.4	271.3	145.2; 183.1	[M - C8H140]-; [M - C5H120]-	37	45
Estrone	270.4	269.2	144.8; 143	[M - C8H120]-; [M - C8H140]-	37	33
4-n-Nonylphenol	220.4	219.3	106.0; 118.7	[M - C8H17]-; [M - C7H17]-	40	34
Pentachlorophenol	266.3	SIR of 264.9 26	; 263.0; 267.1; 59.0		40	-

MRM parameters.

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The presence of bisphenol A and estron in unspiked river water samples.



Chromatograms of spiked river water samples.

ORDERING INFORMATION

Related Parts	Part Number	
SunFire C ₁₈ Column, 3.5 μ m, 2.1 x 50 mm	186002533	
Oasis HLB Cartridge, 3 cc, 60 mg	WAT094226	
LC/MS Certified Vials	see catalog	
Related Documents	Literature Code	
Environmental System Solutions	720001601EN	
A Sensitive Method for the Determination of Endocrine-Disrupting Compounds in River Waters by LC/MS/MS	720001296EN	
Determination of Endocrine Disrupting Compounds (EDCs) in River Water by ACQUITY UPLC Tandem Quadrupole MS	720002335EN	
Endocrine Disruptors – General SPE Guidelines	oasis73	

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