

Electronic Supplementary Information

A new approach for trace analysis of guanidine compounds in surface water with resorcinarene-based ion chromatography columns

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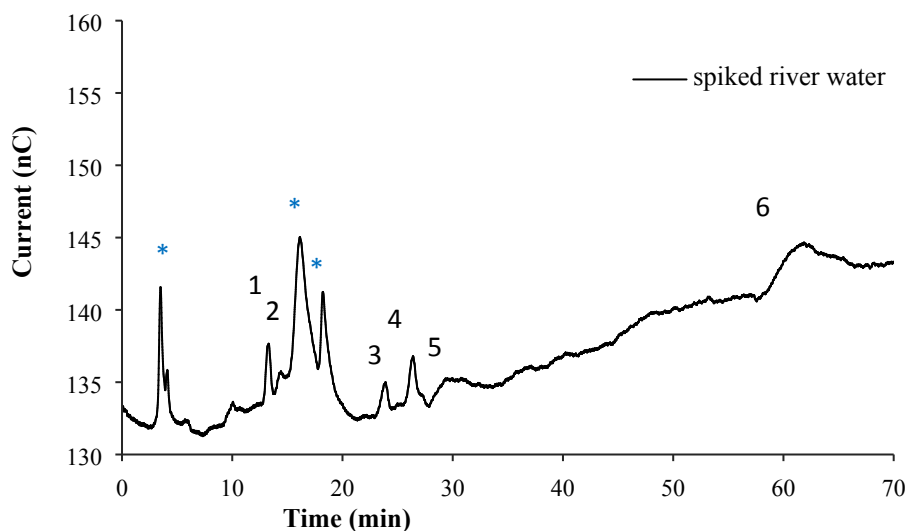


Figure ES1. Separation of guanidine derivatives in river water. Peak assignments: 1-G, 2-MG, 3-DMG, 4-Agm, 5-GBA and 6- CIM (* matrix peaks). Dionex IonPac CS17 analytical column (4 x 250 mm) and IPAD were used. Conditions: flow rate 0.6 ml/min, column equilibrated 10 min with 3 mM MSA before injection. 0-3 min 3mM MSA, 3-5 min 5 mM, 5-7min 7 mM, 7-9 min 9 mM, 9-11 min 10 mM, 11-13 min 11 mM, 13-15 min 13 mM, 15-17 min 14 mM, 17-19 min 15 mM, 19-21 min 17 mM, 21-23 min 19 mM, 23-30 min 20 mM, 30-40 min 22 mM, 40-70 min 25 mM. Analyte concentrations equal to 75 $\mu\text{g/L}$.

Table 1 Calibration curves data obtained with ED detection at room temperature with MSA.

Analyte	Concentration range 1-20 mg/L		Concentration range 0.05-0.85 mg/L			
	Linear equation	R ²	Linear equation	R ²	LOD (µg/L)	LOQ (µg/L)
G	$y = 1.75x + 4.31$	0.99	$y = 47.0 \times 10^{-4}x - 0.0828$	0.98	6	20
MG	$y = 1.36x + 4.03$	0.98	$y = 62.0 \times 10^{-4}x + 1.06$	0.99	5.0	17
DMG	$y = 1.26x + 3.65$	0.98	$y = 41.0 \times 10^{-4}x + 2.29$	0.99	32	110
AGM	$y = 1.69x + 2.44$	0.98	$y = 42.0 \times 10^{-4}x - 0.375$	0.98	8.6	29
GBA	$y = 1.32x + 1.64$	0.97	$y = 89.0 \times 10^{-4}x + 1.780$	0.99	76	250
CIM	$y = 4.29x + 2.37$	0.99	$y = 53.0 \times 10^{-4}x + 1.88$	0.98	8.3	28

a: relative standard deviation was obtain for 3 replications of each experiment

Table 2 Calibration curves data obtained with CD detection at room temperature with MSA.

Analyte	Concentration range 1-20 mg/L		Concentration range 0.05-0.85 mg/L			
	Linear equation	R ²	Linear equation	R ²	LOD (µg/L)	LOQ (µg/L)
G	$y = 0.248x - 0.132$	0.99	$y = 2.00 \times 10^{-4}x + 0.00340$	0.99	1.7	5.7
MG	$y = 0.196x - 0.0697$	0.99	$y = 2.00 \times 10^{-4}x - 0.00170$	0.99	8.2	27
DMG	$y = 0.125x + 0.0005$	0.99	$y = 8.00 \times 10^{-5}x + 0.0299$	0.99	15	52
AGM	$y = 0.212x - 0.0419$	0.99	$y = 1.00 \times 10^{-4}x + 0.00360$	0.99	1.7	5.7
GBA	$y = 0.0931x - 0.00740$	0.99	$y = 8.00 \times 10^{-5}x + 0.000300$	0.98	5.7	19

a: relative standard deviation was obtain for 3 replications of each experiment

Table 3 Calibration curves data obtained with UV-Vis detection at room temperature with MSA.

Analyte	Concentration range 1-20 mg/L		Concentration range 0.05-0.85 mg/L		LOD ($\mu\text{g/L}$)	LOQ ($\mu\text{g/L}$)
	Linear equation	R ²	Linear equation	R ²		
G	$y = 0.233x - 0.00260$	0.99	$y = 2.00 \times 10^{-4}x + 0.0122$	0.99	66	220
MG	$y = 1.03x - 0.949$	0.99	$y = 2 \times 10^{-4}x + 0.00930$	0.99	24	82
DMG	$y = 0.122x + 0.0366$	0.99	$y = 9.00 \times 10^{-5}x + 0.0358$	0.99	11	34
GBA	$y = 0.0912x - 0.0341$	0.99	$y = 9.00 \times 10^{-5}x - 0.00460$	0.98	34	110
CIM	$y = 2.29x + 3.15$	0.99	$y = 758 \times 10^{-4}x + 4.69$	0.98	5.1	17

a: relative standard deviation was obtain for 3 replications of each experiment