Electronic Supplementary Material (ESI) for Analytical Methods.

Supplementary Information

Application of a novel diol-based porous organic polymers on the determination of trace level tetracyclines in water

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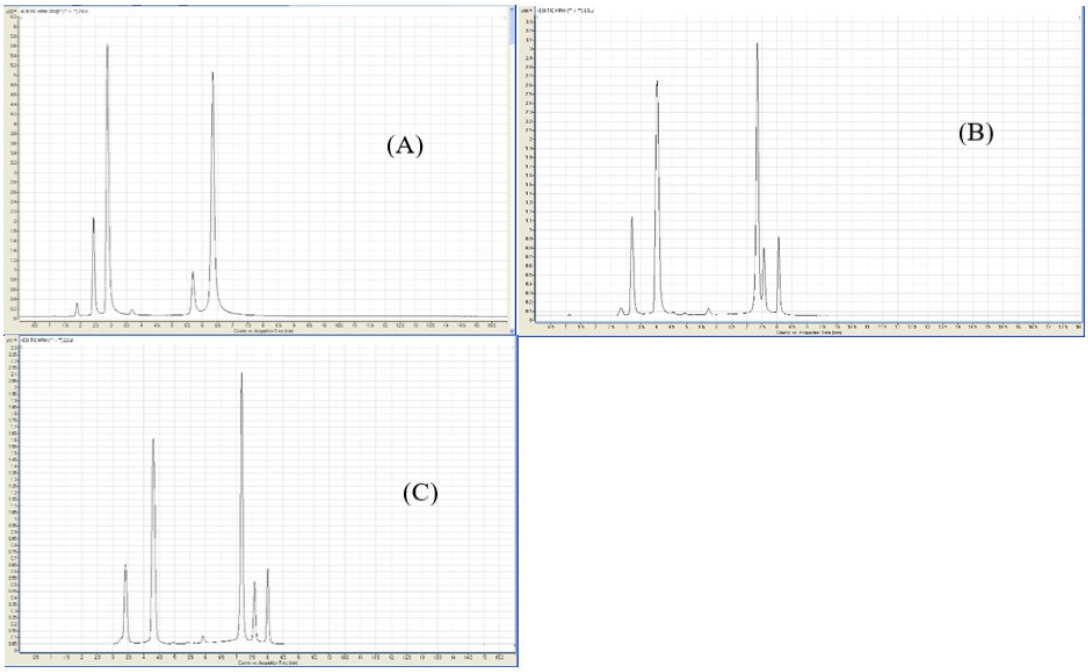


Fig. S1 A total ion chromatogram reflecting the effect of organic mobile phase on chromatographic separation (A) acetonitrile-water; (B) methanol-water; (C) formic acid: acetonitrile (0.1:99.9, v/v)- formic acid: water (0.1:99.9,v/v).Other parameters: flow rate: 0.4 mL·min^{-1}; injection volume: 10 μL.

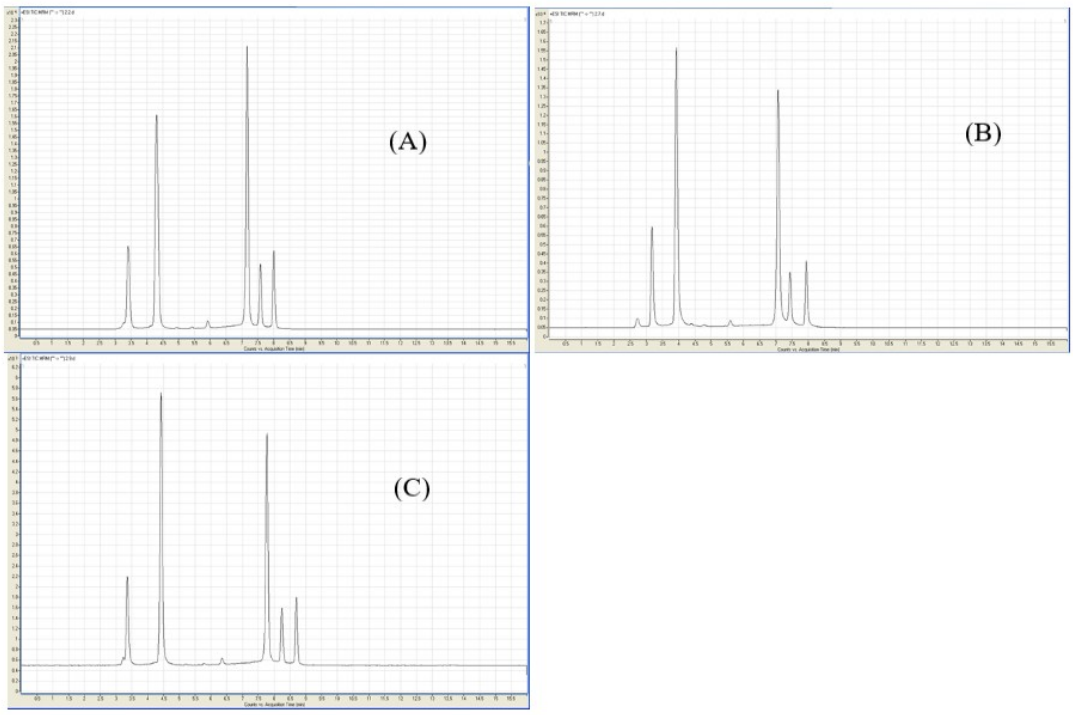


Fig. S2 A total ion chromatogram reflecting the effect of injection volume chromatographic separation (A) 2 µL; (B) 5 µL; (C) 10 µL. Other parameters: mobile phase, formic acid: acetonitrile (0.1:99.9, v/v) - formic acid :water (0.1:99.9, v/v); flow rate: 0.2 $mL \cdot min^{-1}$

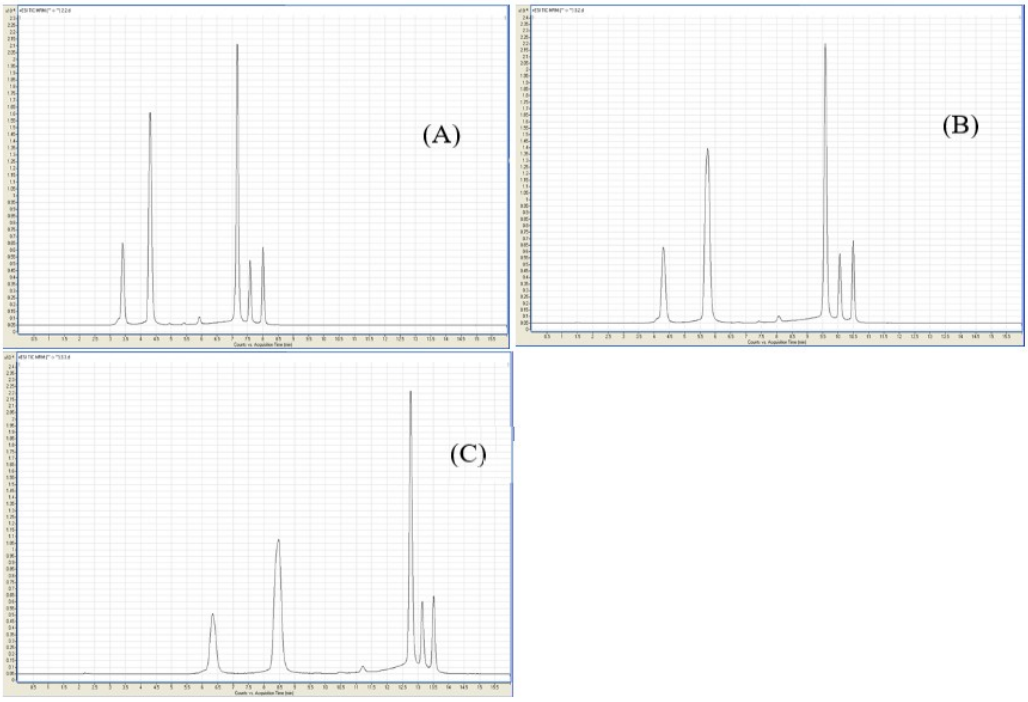
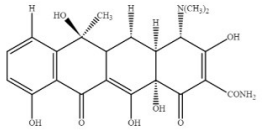
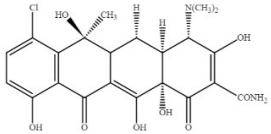
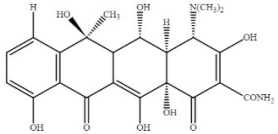
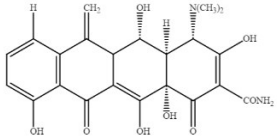


Fig. S3 A total ion chromatogram reflecting the effect of flow rate on chromatographic separation (a) 0.4 mL·min^{-1}; (b) 0.3 mL·min^{-1}; (c) 0.2 mL·min^{-1}. Other parameters: mobile phase, formic acid: acetonitrile (0.1:99.9, v/v)- formic acid: water (0.1:99.9, v/v); injection volume: 10 μL.

Table S1 Development of TCs and their properties

Classification	antibiotics	time to market	Characterizations
First generation	chlortetracycline	1948	Natural broad-spectrum antibiotics containing phenanthranes, widely used in infection caused by gram-positive and negative bacteria, intracellular mycoplasma, chlamydia and rickettsidia
	oxytetracycline	1948	
	tetracycline	1953	
Second generation	demeclocycline	1965	modify the inactivated essential groups in natural tetracyclines to change their antimicrobial activity, chemical stability. These antibiotics are more lipophilic and easier to absorb
	metacycline	1965	
	doxycycline	1967	
	minocycline	1972	
Third generation	tigecycline	2005	The d-ring of natural tetracyclines was replaced by a variety of groups, such as glycyl, dimethylamine and fluorine. This kind of structure is very difficult to construct by the previous semi-synthetic method

Table S2 Target TCs and their properties

Compounds	pK_a	Molecular form	MW (g/mol)	CAS number	Structure
TC	3.32/7.78/9.58	$C_{22}H_{24}N_2O_8$	480.90	64-75-5	
CTC	3.33/7.55/9.33	$C_{22}H_{23}ClN_2O_8$	478.88	57-62-5	
OTC	3.22/7.46/8.94	$C_{22}H_{24}N_2O_9$	460.44	2058-46-0	
MTC	2.88/7.44	$C_{22}H_{22}N_2O_8$	442.42	914-00-1	
DOC	3.52/7.75/9.57	$C_{22}H_{24}N_2O_8$	444.43	564-25-0