Electronic Supplementary Information

Polymyxin B sulfate inducing time-dependent antagonism of the mixtures of pesticide, ionic liquids, and antibiotics to *Vibrio qinghaiensis* sp.-Q67

Ye Fan,[a] Shu-Shen Liu, *[ab] Rui Qu,[a] Kai Li[a] and Hai-Ling Liu*[b]

[a] Key Laboratory of Yangtze River Water Environment, Ministry of Education, College of Environmental Science and Engineering, Tongji University, Shanghai 200092, China

[b] State Key Laboratory of Pollution Control and Resource Reuse, College of Environmental Science and Engineering, Tongji University, Shanghai 200092, China

Total pages: 7
Total Tables: 2
Total figures: 4

Electronic Supplementary Information includes the following: Some physical properties, CAS RN and concentrations of stocks of five chemicals (Table S1); Concentration-response models (α and β), statistics (R^2 and RMSE), median effective concentrations (EC_{50}) of single chemicals at five exposure times (Table S2).The pEC_{20}, pEC_{50} and pEC_{70} of 20 mixture rays of ternary mixture at five exposure times (Fig. S1). The pEC_{20}, pEC_{50} and pEC_{70} of 10 mixture rays of quaternary mixture at five exposure times (Fig. S2). The concentration-response relationships of five mixture rays (R1, R2, R3, R4 and R5) in [hmim]Br-IMI-CHL systems at five exposure times where the black dots (ꝏ) refer to the experimental value, the black solid lines (—) to those fitted by the Weibull, the red solid lines (—) to those predicted by CA and the dashed lines (---) to the 95% confidence intervals (Fig. S3). The concentration-response relationships of five mixture rays (R1, R2, R3, R4 and R5) in [hmim]Cl-IMI-CHL systems at five exposure times where the black dots (ꝏ) refer to the experimental value, the black solid lines (—) to those fitted by the Weibull, the red solid lines (—) to those predicted by CA and the dashed lines (---) to the 95% confidence intervals. (Fig. S4).

Table S1 Some physical properties, CAS RN and concentrations of stocks of five chemicals

Chemical	Abbr.	CAS RN	Purity (%)	M.W.[a]	Concentrations of Stock (mol/L)
Imidacloprid	IMI	138261-41-3	99.5%	255.66	1.631E-03
1-Hexyl-3-methylimidazolium bromide	[hmim]Br	85100-78-3	>98%	247.18	1.035E-02
1-Hexyl-3-methylimidazolium chloride	[hmim]Cl	171058-17-6	>98%	202.73	1.004E-02
Chloramphenicol	CHL	56-75-7	99.9%	323.13	4.054E-06
Polymyxin B sulfate	POL	1405-20-5	95%	1301.56	1.521E-05

[a] MW: molecular weight

Table S2 Concentration-response models (α and β), statistics (R^2 and RMSE), median effective concentrations (EC_{50}) of single chemicals at five exposure times

Chemical	Time (h)	model	α	β	R^2	RMSE	EC_{50}
IMI	0.25	Weibull	5.69	1.79	0.9897	0.0217	4.135E-04
	3	Weibull	6.00	1.87	0.9839	0.0291	3.940E-04
	6	Weibull	5.44	1.69	0.9868	0.0249	3.666E-04
	9	Weibull	5.38	1.68	0.9905	0.0203	3.797E-04
	12	Weibull	6.12	1.94	0.9903	0.0206	4.534E-04
[hmim]Br	0.25	Weibull	8.76	2.77	0.9957	0.0254	5.073E-04
	3	Weibull	15.00	5.57	0.9965	0.0246	1.743E-03
	6	Weibull	8.74	3.29	0.9736	0.0616	1.706E-03
	9	Weibull	7.48	2.78	0.9683	0.0623	1.505E-03
	12	Weibull	11.42	4.33	0.9887	0.0445	1.896E-03
[hmim]Cl	0.25	Weibull	8.91	2.76	0.9948	0.0275	4.355E-04
	3	Weibull	15.00	5.50	0.9919	0.0359	1.607E-03
	6	Weibull	9.71	3.55	0.9749	0.0574	1.451E-03
	9	Weibull	10.42	3.81	0.9928	0.0311	1.475E-03
	12	Weibull	15.00	5.61	0.9982	0.0210	1.823E-03
CHL	0.25	Weibull	9.92	2.11	0.6742	0.0260	1.333E-05
	3	Weibull	5.81	1.09	0.9089	0.0440	2.155E-06
	6	Weibull	8.31	1.37	0.9562	0.0492	4.643E-07
	9	Weibull	11.57	1.85	0.9790	0.0433	3.530E-07
	12	Weibull	13.90	2.21	0.9908	0.0328	3.504E-07
POL	0.25	Weibull	11.36	2.40	0.8956	0.0347	1.300E-05
	3	Weibull	26.15	4.75	0.9981	0.0179	2.616E-06
	6	Weibull	33.05	6.00	0.9960	0.0389	2.695E-06
	9	Weibull	42.60	7.80	0.9910	0.0563	3.101E-06
	12	Weibull	51.80	9.55	0.9982	0.0128	3.448E-06

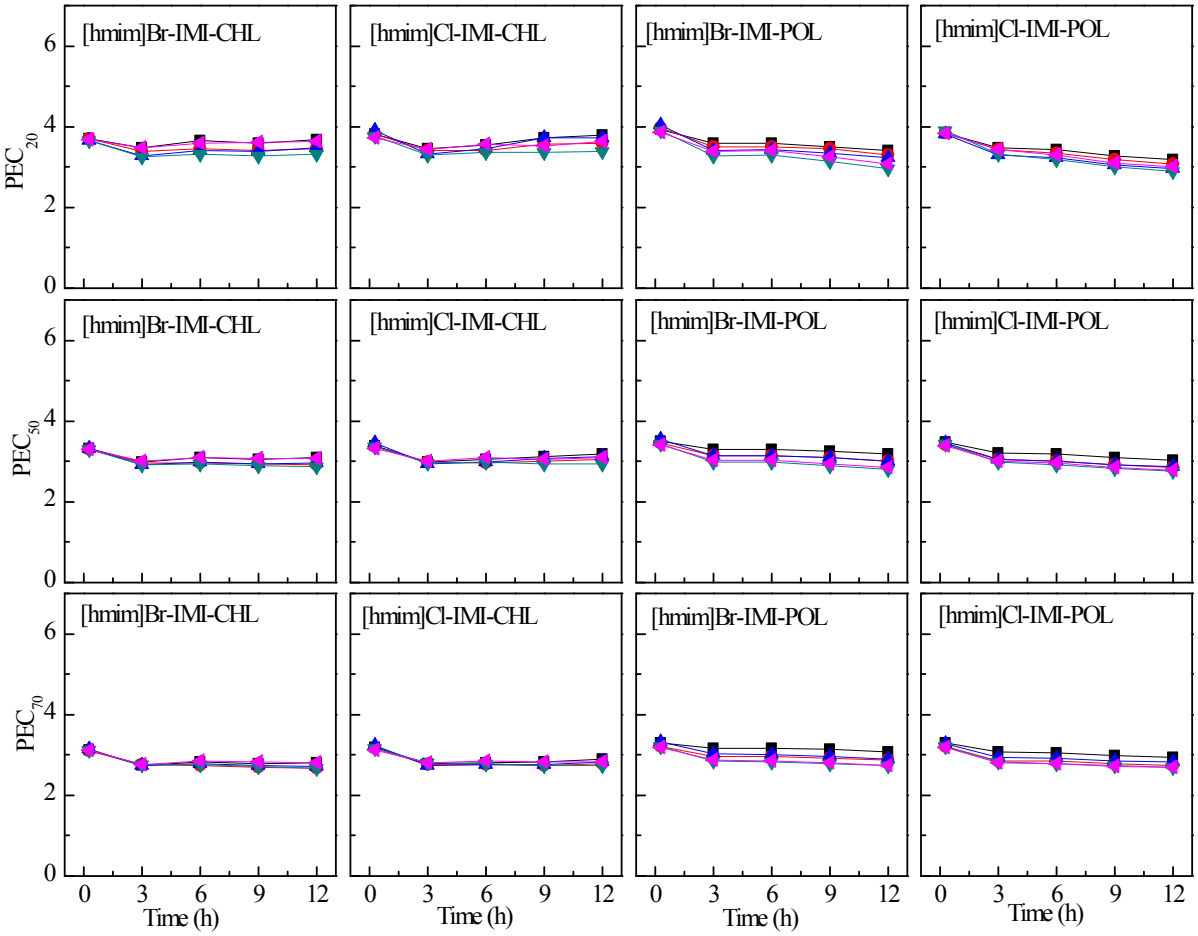

Fig. S1 The pEC_{20}, pEC_{50} and pEC_{70} of 20 mixture rays of ternary mixture at five exposure times

(O: R1; ∞: R2; □: R3; ❑: R4; ♦: R5)

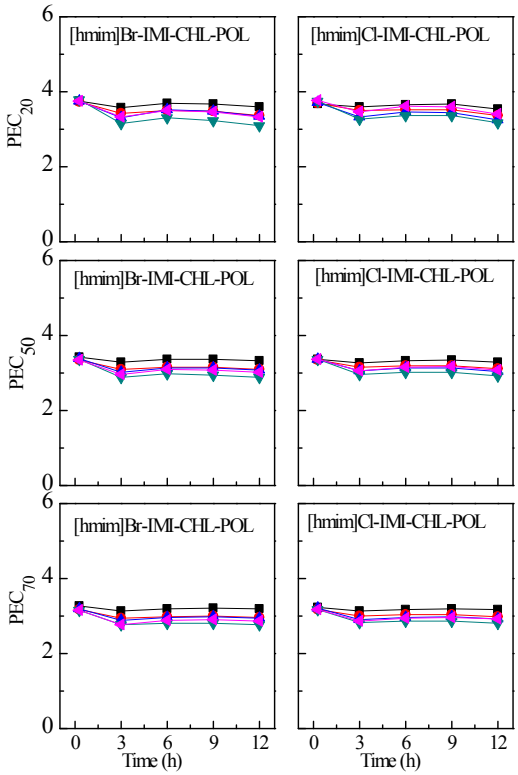

Fig. S2 The pEC_{20}, pEC_{50} and pEC_{70} of 10 mixture rays of quaternary mixture at five exposure times (O: R1; ∞: R2; □: R3; ❑: R4; ♦: R5)

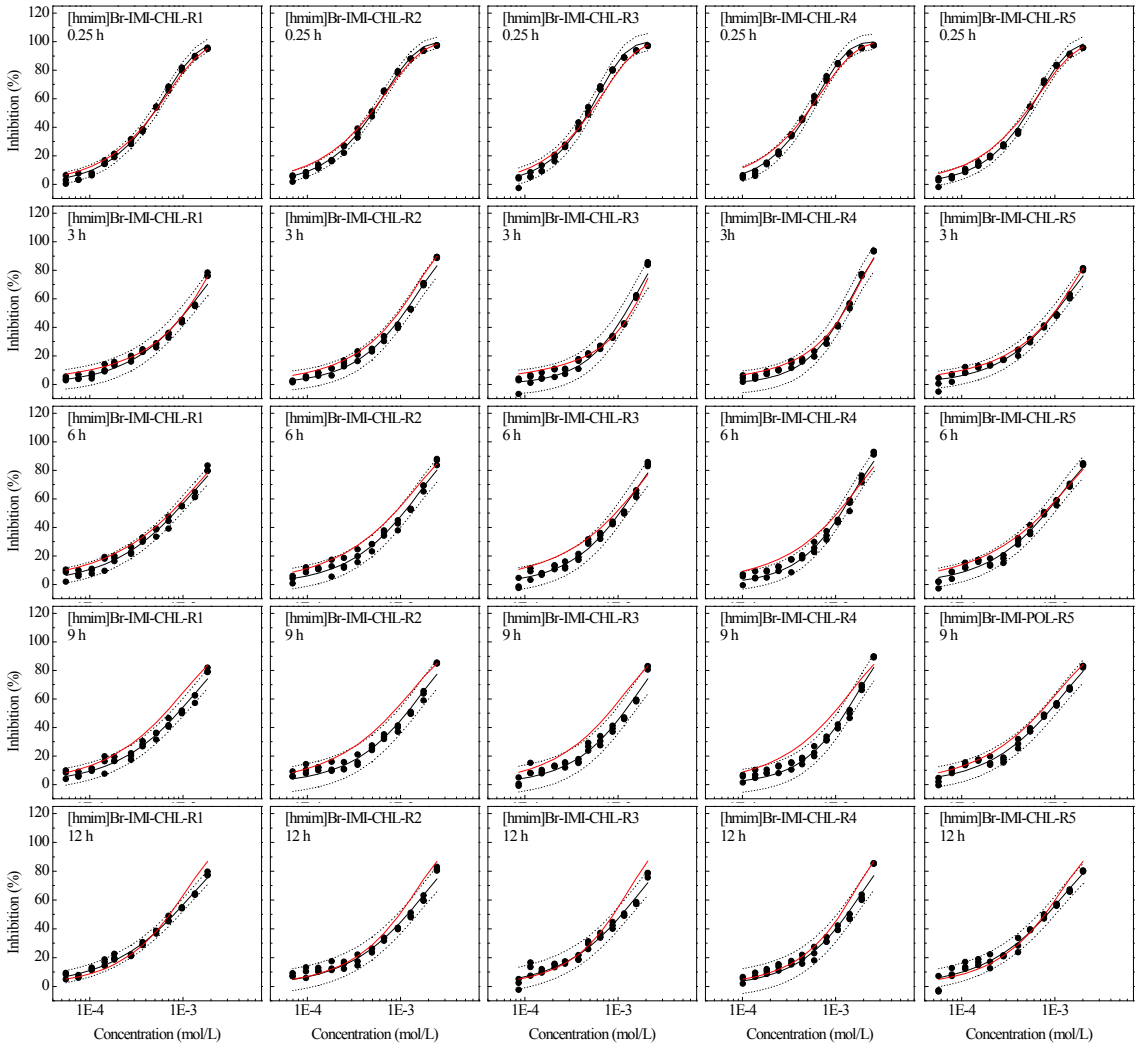

Fig. S3 The concentration-response relationships of five mixture rays (R1, R2, R3, R4 and R5) in [hmim]Br-IMI-CHL systems at five exposure times where the black dots (Ꚙ) refer to the experimental value, the black solid lines (—) to those fitted by the Weibull, the red solid lines (—) to those predicted by CA and the dashed lines (---) to the 95% confidence intervals.

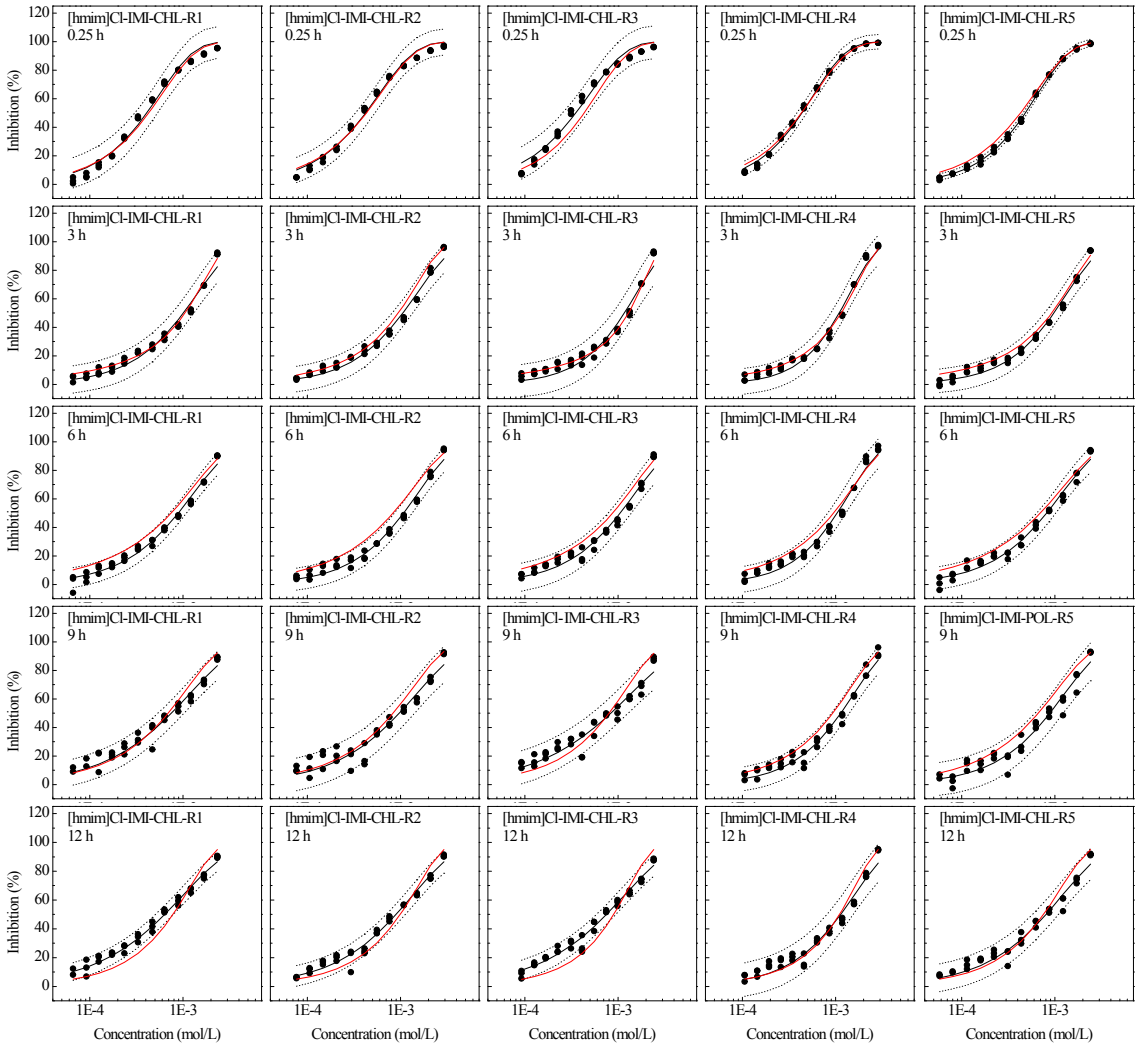

Fig. S4 The concentration-response relationships of five mixture rays (R1, R2, R3, R4 and R5) in [hmim]Cl-IMI-CHL systems at five exposure times where the black dots (Ꚙ) refer to the experimental value, the black solid lines (—) to those fitted by the Weibull, the red solid lines (—) to those predicted by CA and the dashed lines (---) to the 95% confidence intervals.