

Supporting Information

Effect of Fe and Edta on Freshwater Cyanobacteria Bloom Formation

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Number of tables: 4 (S1, S2, S3, S4)

Number of figures: 3 (S1, S2, S3)

Table S1. Standards of trophic state classifications of lakes in China.

Classification	TN mg/L	TP mg/L
Oligotrophic Type	<0.25	<0.02
Mesotrophic Type	0.25–0.7	0.02–0.05
Eutrophic Type	0.7–1.3	0.05–0.09
Hyper-eutrophic Type	>1.3	>0.09

TN = total nitrogen; TP = total phosphorus.

Table S2. The composition of Algal Growth Potential (AGP) medium.

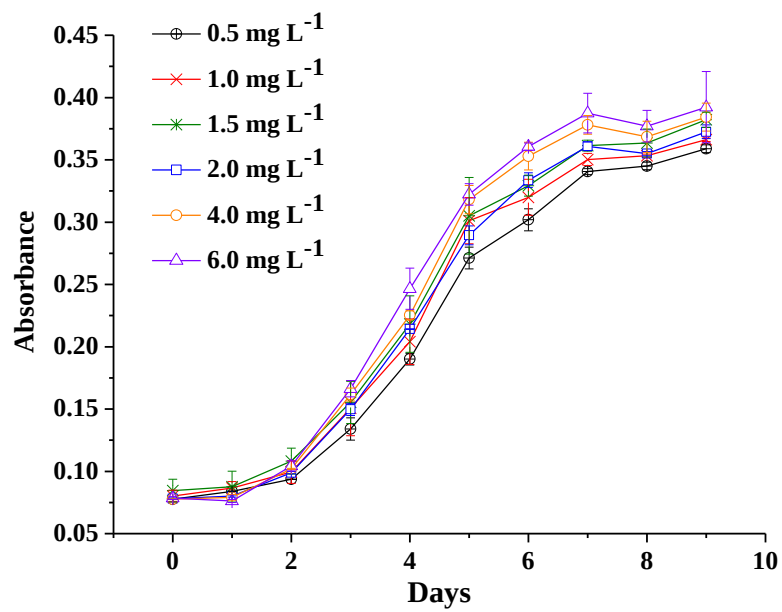
Compound	Macronutrient	Concentration (mg/L)	Element	Concentration (mg/L)
NaNO ₃	-	25.5	N	4.20
-	-	-	C	2.14
NaHCO ₃	-	15.0	Na	11.0
K ₂ HPO ₄	-	1.04	K	0.469
-	-	-	P	0.186
MgSO ₄ ·7H ₂ O	-	14.7	S	1.91
MgCl ₂	-	5.70	Mg	2.90
CaCl ₂ ·2H ₂ O	-	4.41	Ca	1.20
Compound	Micronutrient	Concentration (µg/L)	Element	Concentration (µg/L)
H ₃ BO ₃	-	186	B	32.5
MnCl ₂	-	264	Mn	115
ZnCl ₂	-	3.27	Zn	1.57
CoCl ₂	-	0.780	Co	0.354
CuCl ₂	-	0.009	Cu	0.004
Na ₂ MoO ₄ ·2H ₂ O	-	7.26	Mo	2.88
FeCl ₃	-	96.0	Fe	33.0
Na ₂ EDTA·2H ₂ O	-	300	-	-

Table S3. Results of the Tukey HSD (Honest Significant Difference) test testing for a pairwise effect of Fe concentration with different initial biomasses on *M. aeruginosa* growth rate when the global test was significant (Significance codes: 0'****'0.001'***'0.01 '**'0.05' . ' 0.1' '1).

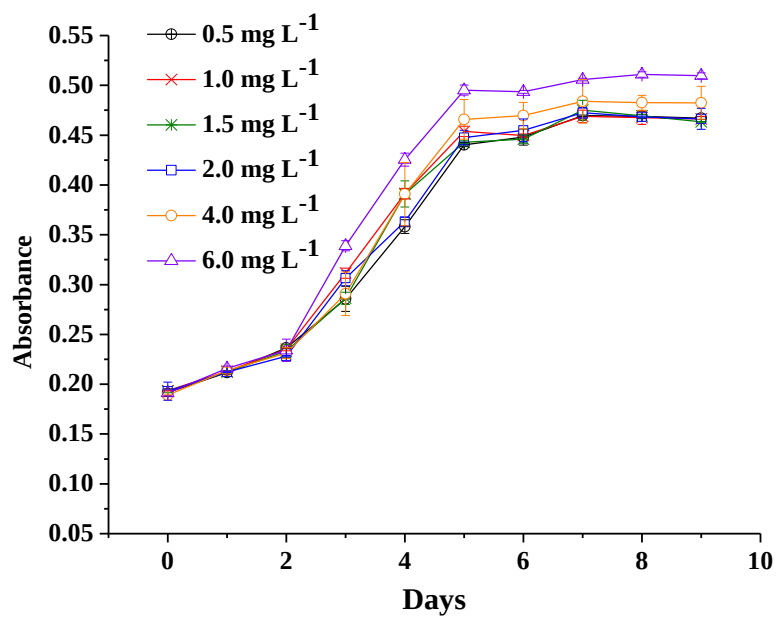
Initial Biomass	Fe Concentration (mg/L)	P-Value
Low	0.5–1.0	0.378
Low	0.5–1.5	0.765
Low	0.5–2.0	0.700
Low	0.5–4.0	0.020*
Low	0.5–6.0	0.002**
Low	1.0–1.5	0.049*
Low	1.0–2.0	0.989
Low	1.0–4.0	0.465
Low	1.0–6.0	0.068
Low	1.5–2.0	0.129
Low	1.5–4.0	0.002**
Low	1.5–6.0	0.000***
Low	2.0–4.0	0.212
Low	2.0–6.0	0.025*
Low	4.0–6.0	0.779
Middle	0.5–1.0	0.323
Middle	0.5–1.5	0.028*
Middle	0.5–2.0	0.063
Middle	0.5–4.0	0.031*
Middle	0.5–6.0	0.002**
Middle	1.0–1.5	0.645
Middle	1.0–2.0	0.886
Middle	1.0–4.0	0.684
Middle	1.0–6.0	0.102
Middle	1.5–2.0	0.996
Middle	1.5–4.0	0.999
Middle	1.5–6.0	0.738
Middle	2.0–4.0	0.998
Middle	2.0–6.0	0.468
Middle	4.0–6.0	0.701
High	0.5–1.0	0.009**
High	0.5–1.5	0.005**
High	0.5–2.0	0.026*
High	0.5–4.0	0.023*
High	0.5–6.0	0.000***
High	1.0–1.5	0.538
High	1.0–2.0	0.971
High	1.0–4.0	0.960
High	1.0–6.0	0.002**
High	1.5–2.0	0.915
High	1.5–4.0	0.933
High	1.5–6.0	0.046*
High	2.0–4.0	0.999
High	2.0–6.0	0.008**
High	4.0–6.0	0.009**

Table S4. Results of the Tukey HSD (Honest Significant Difference) test testing for a pairwise effect of initial biomasses of *M. aeruginosa* on the growth rate when the global test has been significant (Significance codes: 0'***'0.001'***'0.01'***'0.05' . ' 0.1' '1).

Fe Concentration (mg/L)	Initial Biomass	P-Value
0.5	Low–High	0.000***
0.5	Middle–High	0.002**
0.5	Middle–Low	0.007**
1.0	Low–High	0.000***
1.0	Middle–High	0.003**
1.0	Middle–Low	0.012*
1.5	Low–High	0.149
1.5	Middle–High	0.021*
1.5	Middle–Low	0.322
2.0	Low–High	0.000***
2.0	Middle–High	0.000***
2.0	Middle–Low	0.145
4.0	Low–High	0.000***
4.0	Middle–High	0.006**
4.0	Middle–Low	0.037*
6.0	Low–High	0.015*
6.0	Middle–High	0.196
6.0	Middle–Low	0.171



(A)



(B)

Figure S1. Growth curves of *M. aeruginosa* with different EDTA-Fe concentrations with low initial biomass (A) and high initial biomass (B). Error bars show standard deviation (± 1 SD, $n = 3$).

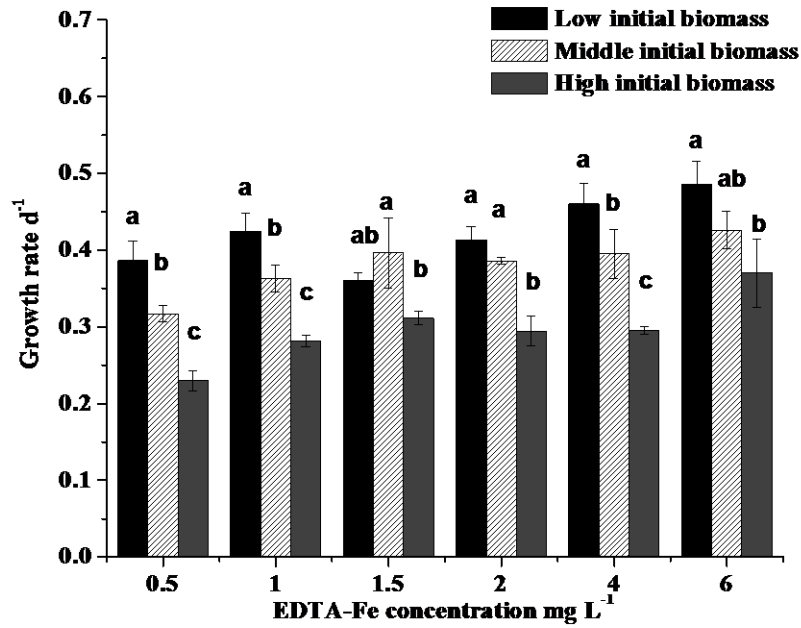


Figure S2. Effect of different initial biomasses on *M. aeruginosa* growth rate with EDTA-Fe concentrations from 0.5 to 6 mg/L. Small letters (a, b, c, d) indicate significantly different effects of EDTA-Fe concentration on growth rate ($P < 0.05$, TukeyHSD). The global effects of concentrations are significant for all three initial biomasses ($P < 0.05$). Error bars show standard deviation (± 1 SD, $n = 3$).

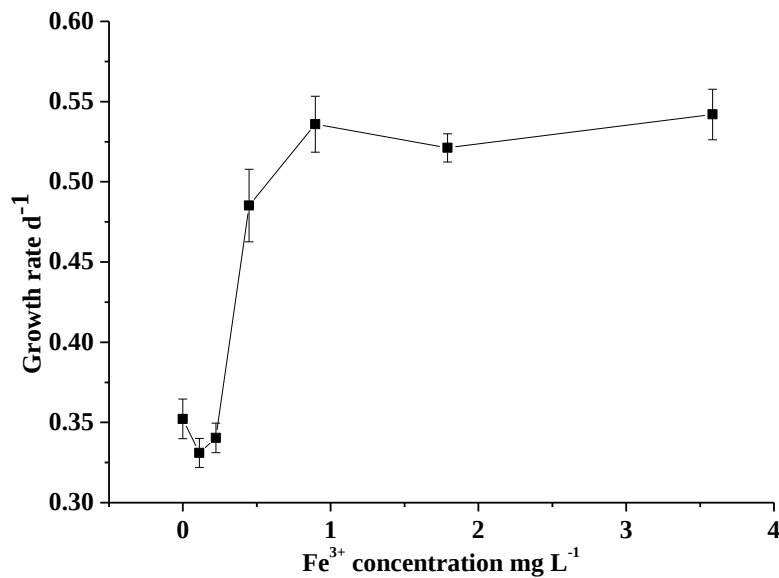


Figure S3. Changes in growth rate of *M. aeruginosa* with increasing concentration of Fe³⁺ with 0.3 mg/L EDTA. Error bar shows standard deviation (± 1 SD, $n = 3$).