

Article

Effective Early Treatment of *Microcystis* Exponential Growth and Microcystin Production with Hydrogen Peroxide and Hydroxyapatite

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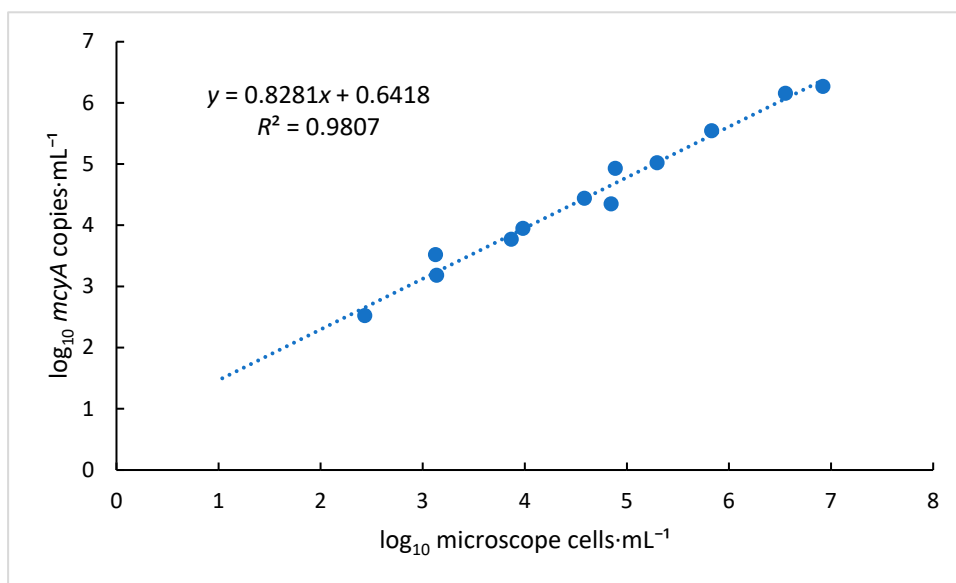
Table S1. Formula for Low N BG-11

Low N BG-11	mg·L ⁻¹
Calcium chloride dihydrate	36
EDTA disodium magnesium	1
Magnesium sulfate • 7H ₂ O	75
Potassium phosphate dibasic	40
Sodium bicarbonate	0
Sodium nitrate	15
Citric acid	6
Ferric EDTA	8.6
Zinc sulfate • 7H ₂ O	0.222
Boric acid	2.86
Cobalt nitrate • 6H ₂ O	0.0494
Cupric sulfate • 5H ₂ O	0.079
Manganese chloride • 4H ₂ O	1.81
Sodium molybdate • 2H ₂ O	0.39
Sodium chloride	1000

Table S2. Summary of experimental conditions

Culture	Medium	Volume (mL)	Starting concentration (cells·mL ⁻¹)
Stock	BG-11	200	-
Growth curves	LowN	1000	10 ² or 10 ³
HAP particle size	Low N	200	5 × 10 ³
HAP conc.	LowN	200	10 ⁴
H ₂ O ₂ conc.	LowN	200	10 ⁴
H ₂ O ₂ low cell conc.	Low N	1000	10 ²

A



B

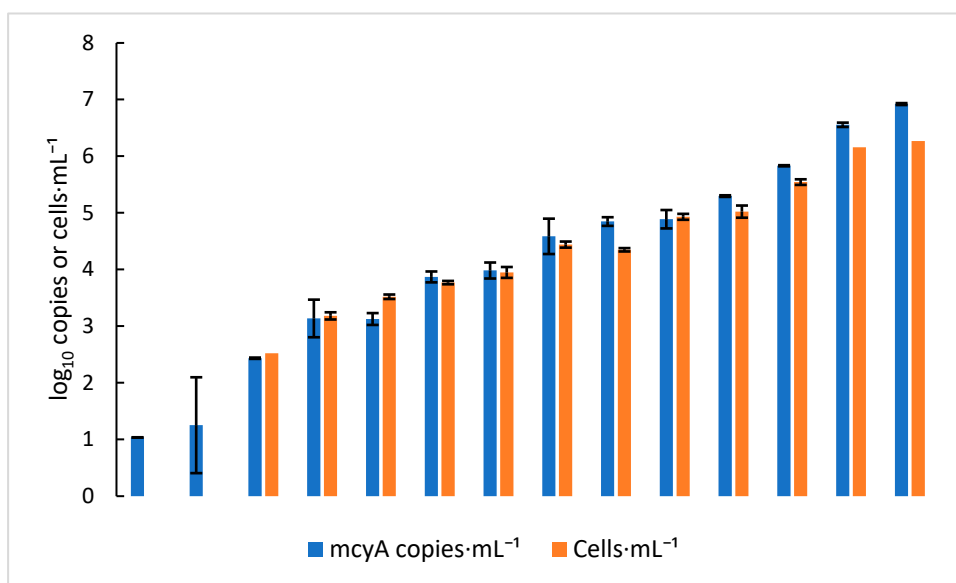
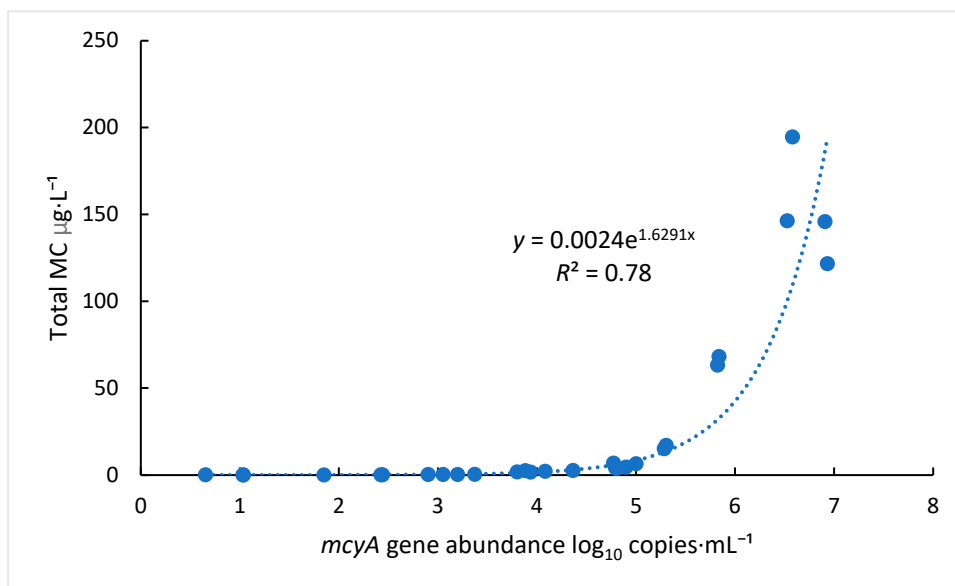


Figure S1. Linear regression between *mcyA* gene abundance detected by qPCR (copies·mL⁻¹) and microscopic counts (cells·mL⁻¹). (A) . Regression of the *mcyA* gene abundance \log_{10} copies·mL⁻¹ compared to microscopy counts \log_{10} cell·mL⁻¹ showing correlation between gene copies and cell counts (B) Average \log_{10} copy·mL⁻¹ and \log_{10} cell·mL⁻¹ for each sampling event; error bars represent standard deviation of duplicate samples.

A.



B.

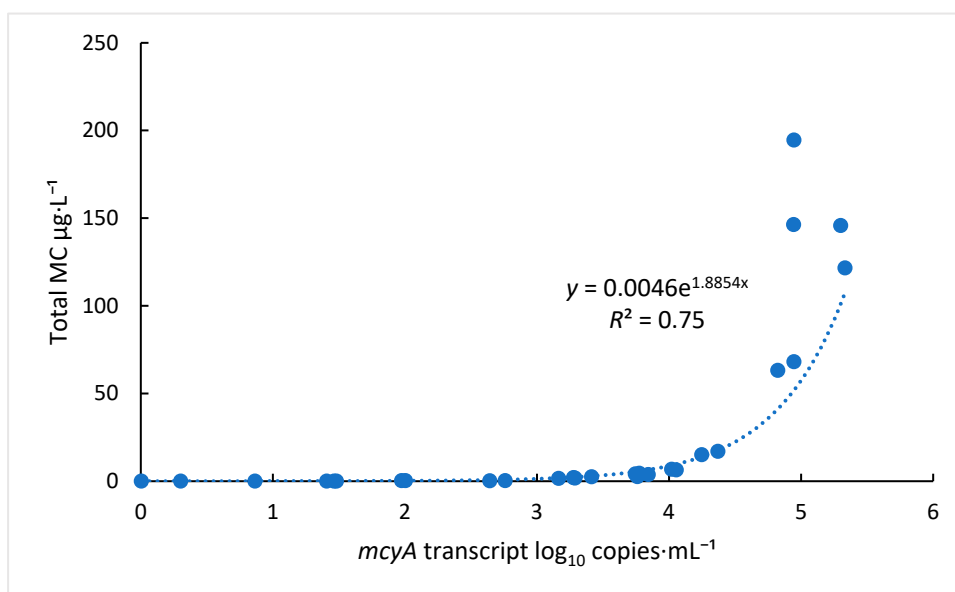
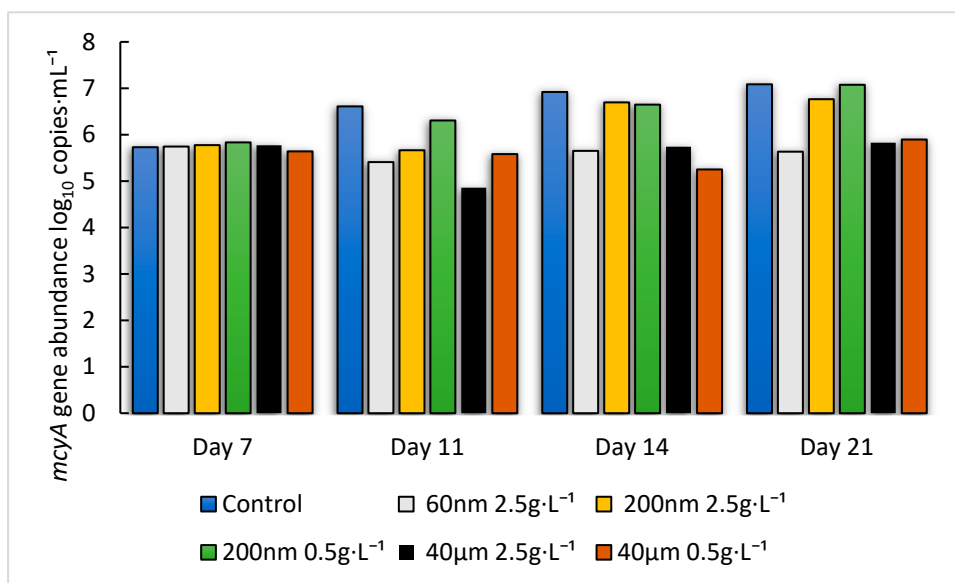


Figure S2. Regression of total MC concentration ($\mu\text{g}\cdot\text{L}^{-1}$) compared to (A) \log_{10} *mcyA* gene abundance $\text{copies}\cdot\text{mL}^{-1}$ and (B) \log_{10} *mcyA* transcript $\text{copies}\cdot\text{mL}^{-1}$ showing exponential increase of MC concentration after a cell concentration of $4 \log_{10}$ copy $\cdot\text{mL}^{-1}$ is reached.

A.



B.

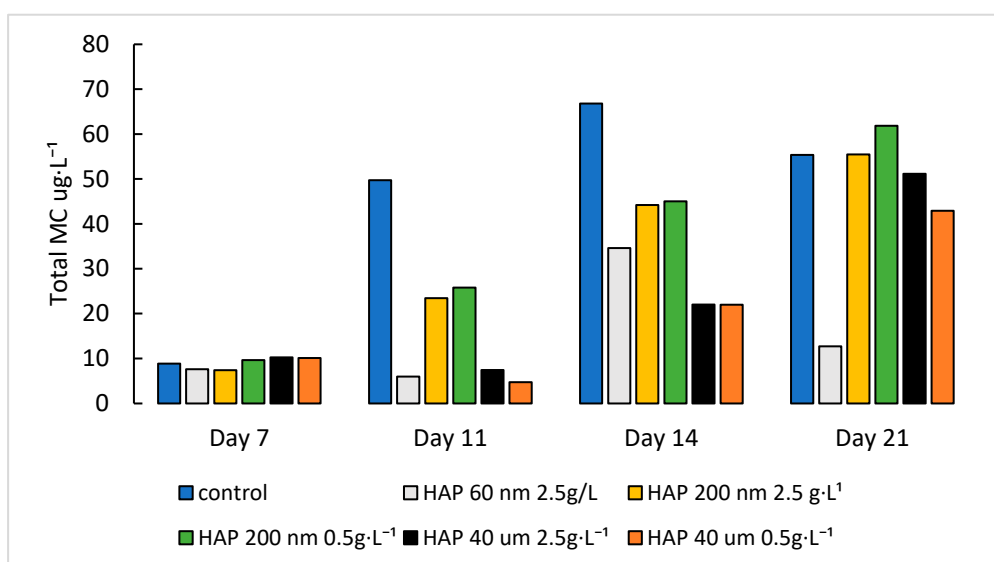
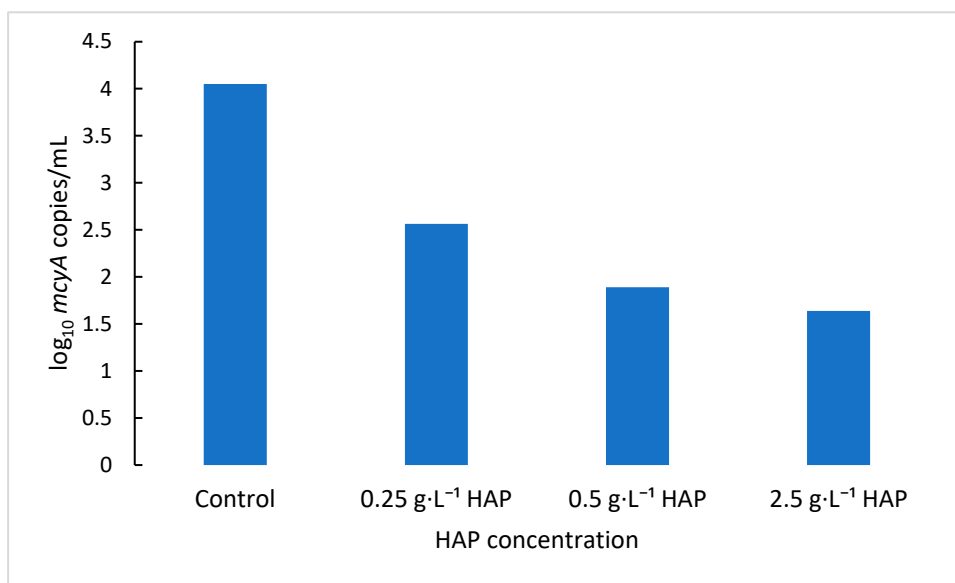


Figure S3. Effect of HAP particle size and concentration on average concentration of (A) *mcvA* gene abundance \log_{10} copies·mL⁻¹ and (B) MC $\mu\text{g}\cdot\text{L}^{-1}$ of *Microcystis* cultures treated with different size and concentrations of HAP.

A.



B.

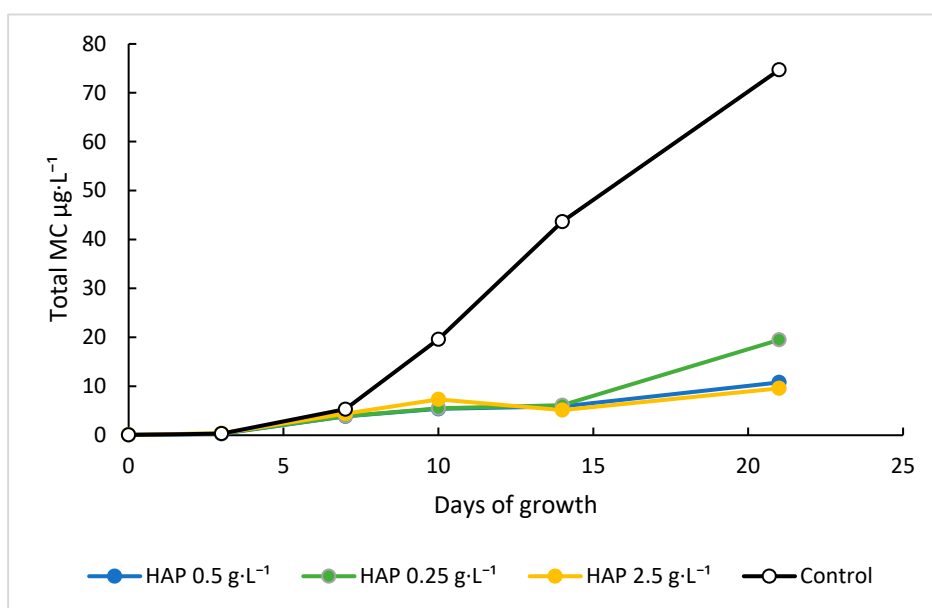


Figure S4. Effect of 40 μm HAP treatment at different concentrations on (A) *mcyA* gene abundance \log_{10} copies·mL⁻¹ after 21 days of growth after treatment on day seven for 2.5 g·L⁻¹ or days 4, 7, 10, and 14 for 0.5 g·L⁻¹ and 0.25 g·L⁻¹ of HAP showing that increased HAP concentration lowered cell concentration and (B) Total MC concentration measured in cultures treated with different concentrations of HAP.

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