

Supplementary Material



Allelopathic Inhibition by the Bacteria *Bacillus cereus* BE23 on Growth and Photosynthesis of the Macroalga *Ulva prolifera*

Naicheng Li¹, Jingyao Zhang¹, Xinyu Zhao², Pengbin Wang³, Mengmeng Tong^{1,*} and Patricia M. Glibert^{4,5}

- ¹ Ocean College, Zhejiang University, Zhoushan 316021, China; linaicheng23@163.com (N.L.); jyzhang96@zju.edu.cn (J.Z.)
- ² College of Marine Life Sciences, Ocean University of China, Qingdao 266003, China; xyzhao331@gmail.com
- ³ Key Laboratory of Marine Ecosystem Dynamics, Second Institute of Oceanography, Ministry of Natural Resources, Hangzhou 310012, China; algae@sio.org.cn
- ⁴ University of Maryland Center for Environmental Science, Horn Point Laboratory, Cambridge MD 21613, USA; glibert@umces.edu
- ⁵ School of Oceanography, Shanghai Jiao Tong University, 1954 Huashan Rd., Shanghai 200204, China
- * Correspondence: mengmengtong@zju.edu.cn

| Time Treatments | 0h | 48h | 96h | 144h | 192h |
|--------------------|---------------|-----------------|-----------------|-----------------|---------------|
| Control | 7.48 ± 0.12 | 8.08 ± 0.32 | 8.71 ± 0.13 | 8.78 ± 0.10 | 8.94 ± 0.06 |
| T 1:100 | 7.40 ± 0.02 | 7.93 ± 0.05 | 8.62 ± 0.09 | 8.91 ± 0.03 | 8.92 ± 0.07 |
| T 1:80 | 7.46 ± 0.08 | 7.73 ± 0.08 | 8.30 ± 0.01 | 8.63 ± 0.19 | 8.76 ± 0.16 |
| T 1:60 | 7.48 ± 0.08 | 7.55 ± 0.11 | 7.93 ± 0.03 | 8.33 ± 0.17 | 8.44 ± 0.25 |
| T 1:40 | 7.45 ± 0.04 | 7.48 ± 0.03 | 7.56 ± 0.18 | 7.91 ± 0.14 | 8.37 ± 0.06 |
| T1:20 | 7.61 ± 0.08 | 7.51 ± 0.01 | 7.53 ± 0.04 | 7.55 ± 0.07 | 7.73 ± 0.14 |
| T 1:10 | 7.68 ± 0.06 | 7.61 ± 0.08 | 8.00 ± 0.16 | 7.98 ± 0.17 | 8.22 ± 0.10 |

Table S1. Changes of pH values with culture time in exposed experiments.



Figure S1. Phylogenetic tree of *Bacillus cereus* BE23. The scale bar represents 0.005 substitutions per nucleotide position.



Figure S2. Relative growth rates and inhibition rates of *Ulva prolifera* of the first bioassay test. Values are means \pm SD (n = 3). *indicates a significant difference (*P* < 0.05) compared to control.



Figure S3. Relative growth rates and inhibition rates of *Ulva prolifera* in the second bioassay test. Values are means \pm SD (n = 3). *indicates a significant difference (*P* < 0.05) compared to control.



Figure S4. Relative growth rates and inhibition rates of *Ulva prolifera* in the third bioassay test. Values are means \pm SD (n = 3). *indicates a significant difference (P < 0.05) compared to control.



Figure S5. High resolution electrospray ionization mass spectrometry (HRESIMS) spectrum (**a**), ¹³C NMR spectrum (**b**) and ¹H NMR spectrum (**c**) of compound Ech₅₄.



Figure S6. High resolution electrospray ionization mass spectrometry (HRESIMS) spectrum (**a**), ¹³C NMR spectrum (**b**) and ¹H NMR spectrum (**c**) of compound Eea₂₋₅.



Figure S7. High resolution electrospray ionization mass spectrometry (HRESIMS) spectrum (**a**), ¹³C NMR spectrum (**b**) and ¹H NMR spectrum (**c**) of compound Eea₃₋₂.