

**SUPPLEMENTAL INFORMATION**

**for**

**Effect of intracellular algal organic matter and nitrate on disinfection byproduct formation  
in chlorinated water after UV/H<sub>2</sub>O<sub>2</sub> and UV/Cl<sub>2</sub> advanced oxidation processes**

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Table S1. Preliminary Data for Selecting the Filter

Type of Filter	TOC (mg/L)	TN (mg/L)
Ultrapure water	0.082	Not detectable
Mixed cellulose ester 0.45 reagent water	0.049	Not detectable
Nylon 0.45 reagent water	1.001	0.235

Table S2. THM4 in Standard Solution

Compound	Compound abv	CAS	Concentration	RT (min)
Bromodichloromethane	BDCM	(75-27-4)	200 µg/mL	11.4
Bromoform	BF	(75-25-2)	200 µg/mL	28.6
Chloroform	CF	(67-66-3)	200 µg/mL	8.43
Dibromochloromethane	DBCM	(124-48-1)	200 µg/mL	22.3

**THM and HAA extraction protocol:**

For THMs liquid-liquid extraction consisted of adding 3.0 mL of methyl tert-butyl ether (MTBE) and 4 g Na<sub>2</sub>SO<sub>4</sub> to 50 mL of the sample, shaking vigorously for 11 min, and then inverting for five minutes to allow water and MTBE phases to separate. After that, 1 mL of the MTBE phase was transferred to an autosampler vial, 10 µL of 4-bromofluorobenzene was added as an internal standard, and vials were stored at -20°C until analysis.

The liquid-liquid extraction method for HAAs consisted of transferring 40 mL of the water sample to a precleaned 60-mL glass vial with a PTFE-lined screw cap using a clean graduated cylinder for each sample, adding 2 mL concentrated sulfuric acid (97% ACS grade) and 16 g of Na<sub>2</sub>SO<sub>4</sub>, and shaking vigorously by hand until all Na<sub>2</sub>SO<sub>4</sub> was dissolved. Next, 3.0 mL of MTBE with internal standard (120 µg/L of 1,2-dibromopropane) was added to sample and the mixture was shaken vigorously for 14 min, after which the phases were allowed to separate for 5 mins. Then 2 mL of the upper MTBE layer was transferred to a 15 mL centrifuge tube, mixed with 1 mL of 15% sulfuric acid in methanol, sealed and heated in a water bath at 40°C for 160 min. After the tubes cooled to room temperature, 8.5 mL of a 129 g/L Na<sub>2</sub>SO<sub>4</sub> solution was added to each centrifuge tube, and upon separation the lower layer was discarded. Finally, 1 mL of

saturated  $\text{NaHCO}_3$  solution was added, and the upper layer was transferred to an autosampler vial and stored at  $-20^\circ\text{C}$  until analysis.

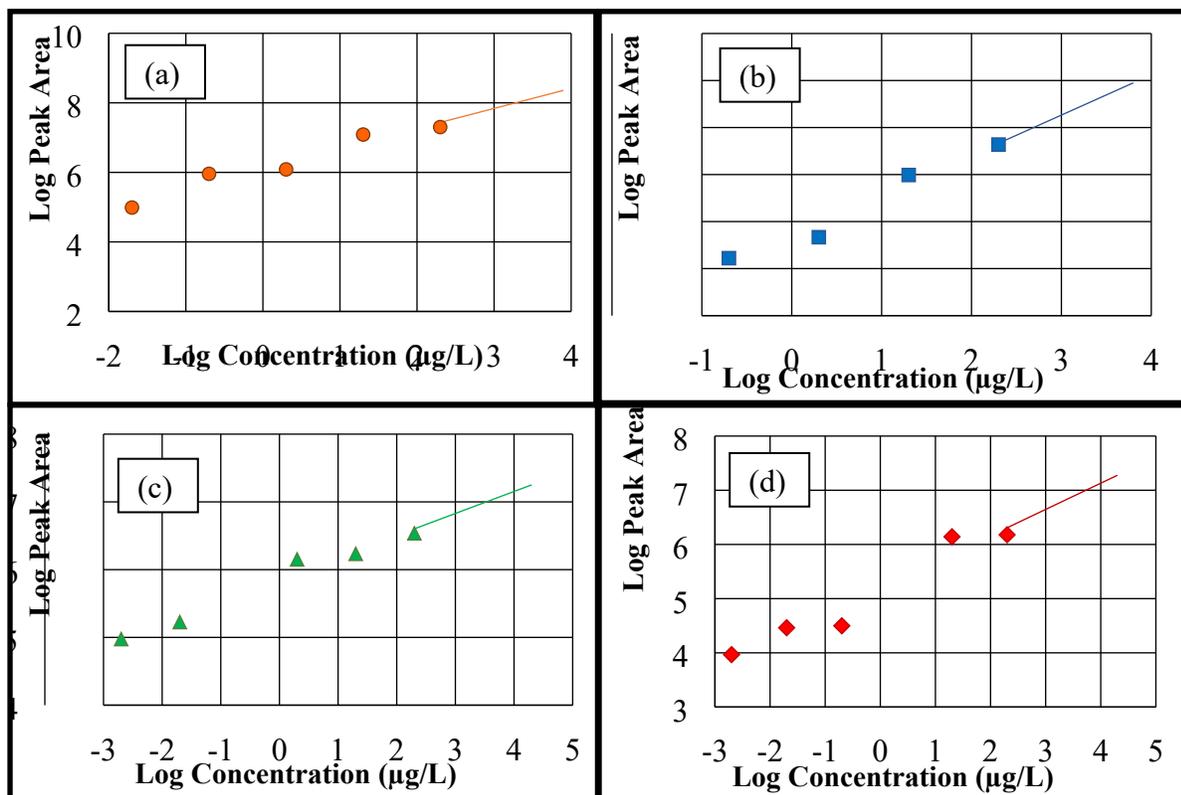


Figure S1. GC-ECD Standard curves of THMs: (a) chloroform, (b) bromodichloromethane, (c) dibromochloromethane, and (d) bromoform

Table S3. HAA9 in standard solution

Compound	Compound abv	CAS	Concentration
Bromochloroacetic acid	BCAA	(5589-96-8)	400 µg/mL
Bromodichloroacetic acid	BDCAA	(71133-14-7)	400 µg/mL
Chlorodibromoacetic acid	CDBAA	(5278-95-5)	1000 µg/mL
Dibromoacetic acid	DBAA	(631-64-1)	200 µg/mL
Dichloroacetic acid	DCAA	(79-43-6)	600 µg/mL
Monobromoacetic acid	MBAA	(79-08-3)	400 µg/mL
Monochloroacetic acid	MCAA	(79-11-8)	600 µg/mL
Tribromoacetic acid	TBAA	(75-96-7)	2000 µg/mL
Trichloroacetic acid	TCAA	(76-03-9)	200 µg/mL

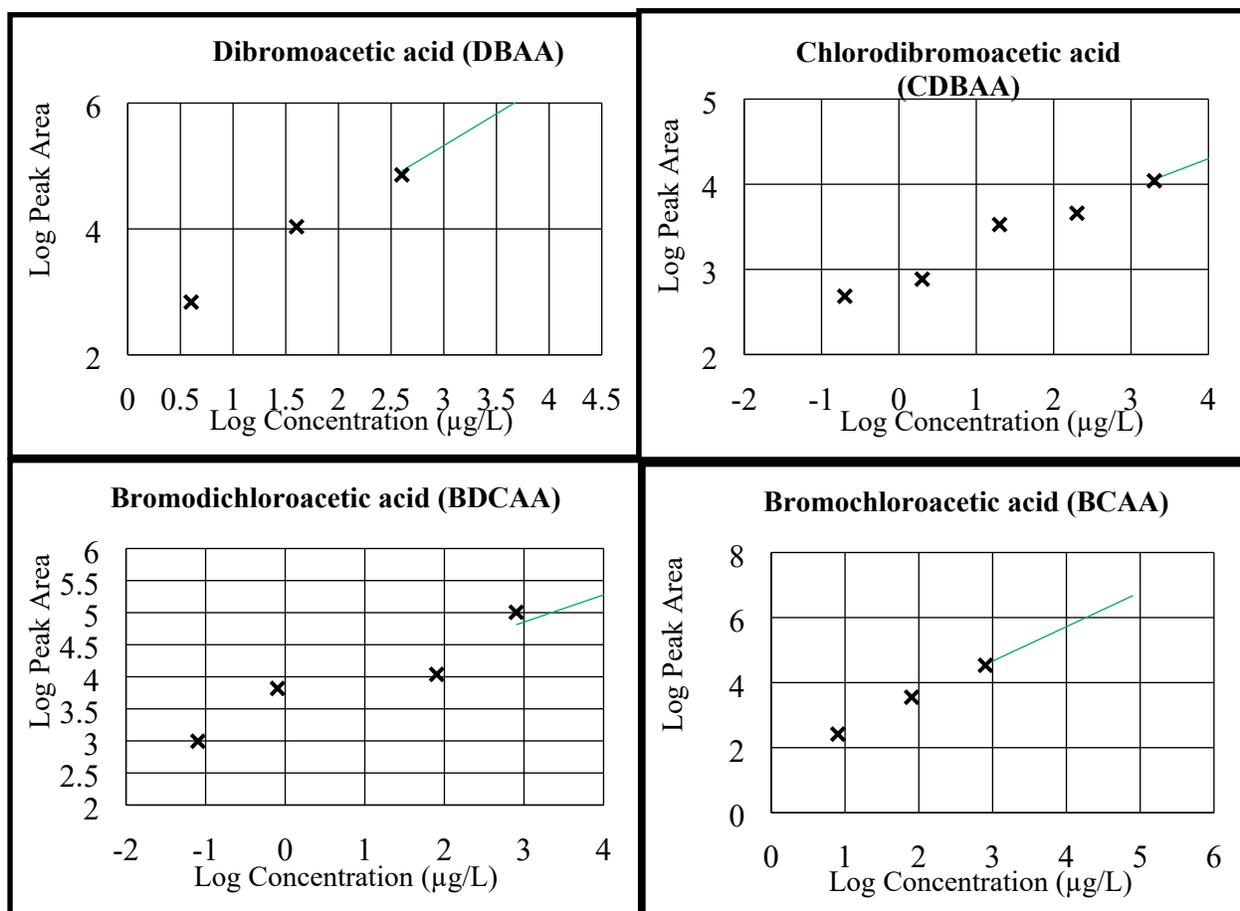


Figure S2. GC-ECD standard curves for HAAs (continued on next page)

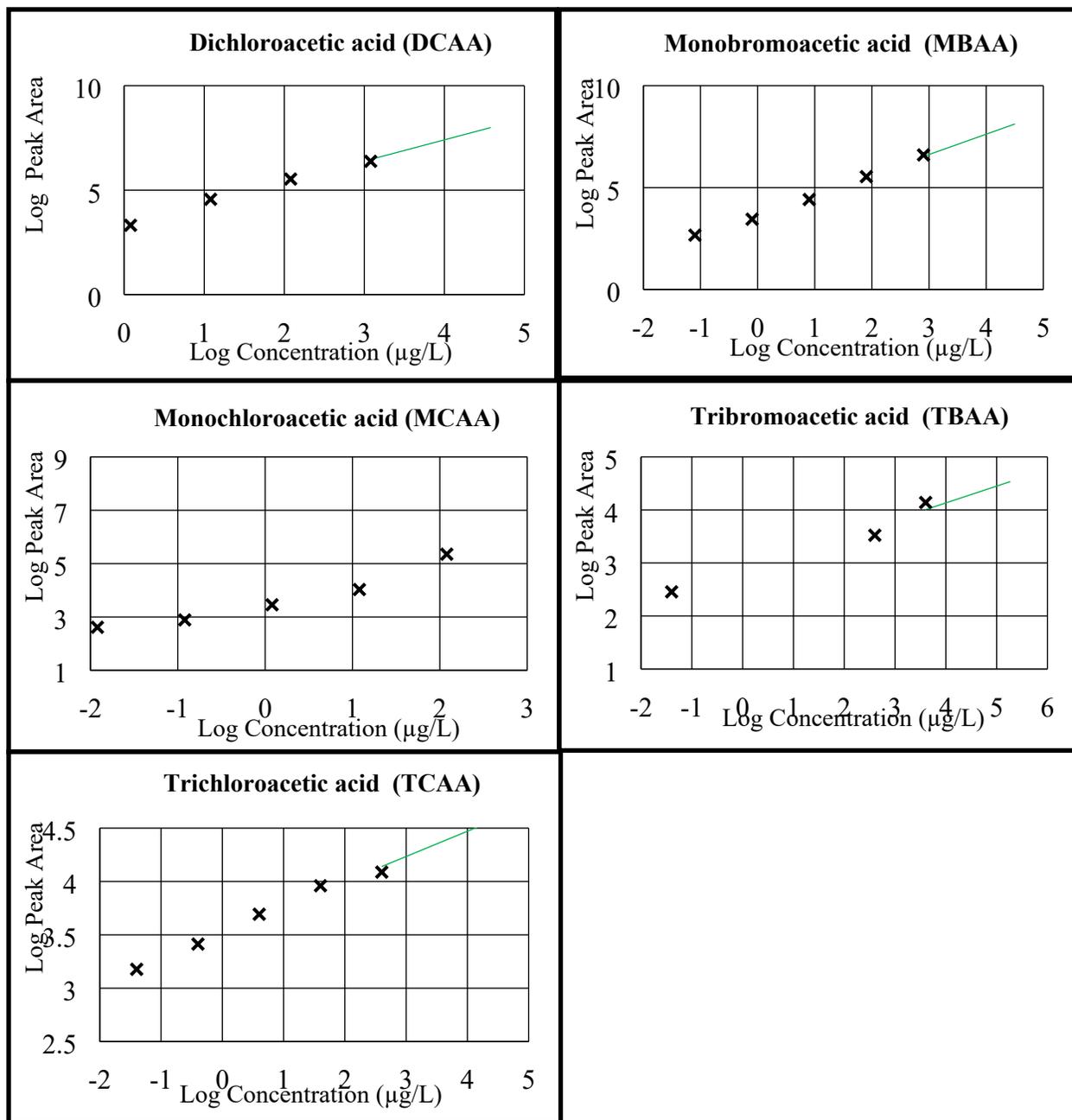


Figure S2. (continued) GC-ECD standard curves for HAAs

Table S4. Optimized LC-MS/MS conditions for NDMA detection

Compounds	Parent Ion (m/z) [M+H] <sup>+</sup>	Product Ion (m/z) [M+H] <sup>+</sup>	Collision Energy (eV)	Cell Accelerator Voltage
NDMA	75	43	15	4
NDMA-d6	81	46	25	4
NDPA-d14	145	97	25	4

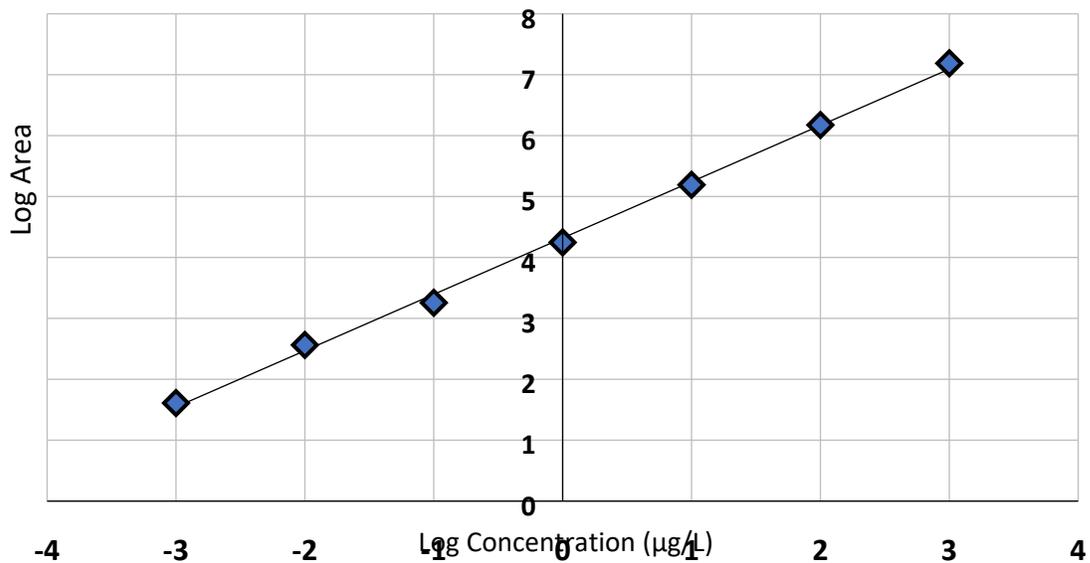


Figure S3. LC-MS/MS Calibration Curve for NDMA