

Supplementary Materials

Supplemental Table S1. Results from post-hoc comparisons between treatments, sampling date and marine heatwave stage (function “emmeans”). C – control, I – marine heatwave category I, IV – marine heatwave category IV, fM – concentration in fM per cell, MF – molar fraction (%).

Contrasts	Odds ratio/Estimate	Standard error	z-ratio	P-value
Cell concentration				
C-I	0.981	0.030	-0.633	0.8020
C-IV	0.986	0.030	-0.462	0.8891
I-IV	1.005	0.031	0.158	0.9863
Beginning – Peak	0.412	0.013	-27.51	<.0001
Beginning – Recovery	0.466	0.015	-23.19	<.0001
Peak - Recovery	1.132	0.029	4.89	<.0001
Chain formation				
C-I	1.15	0.081	2.06	0.0989
C-IV	2.76	0.189	14.76	<.0001
I-IV	2.39	0.160	13.03	<.0001
Beginning – Peak	0.42	0.030	-12.23	<.0001
Beginning – Recovery	0.52	0.037	-9.11	<.0001
Peak - Recovery	1.26	0.077	3.76	0.0005
Cell length				
Beginning – Peak	0.0021	0.000538	3.90	0.0003
Beginning – Recovery	-0.0022	0.000538	-4.17	<.0001
Peak - Recovery	-0.0043	0.000538	-8.07	<.0001
Fv/Fm				
Beginning – Peak	-0.079	0.016	-4.96	<.0001
Beginning – Recovery	-0.065	0.015	-4.40	<.0001
Peak - Recovery	0.013	0.016	0.87	0.6609
PSP toxicity				
C-I	6.98	2.4	2.905	0.0103
C-IV	5.93	2.4	2.468	0.0362
I-IV	-1.05	2.4	-0.437	0.9000
Beginning – Peak	4.54	2.4	1.890	0.1417
Beginning – Recovery	9.67	2.4	4.025	0.0002
Peak - Recovery	5.13	2.4	2.135	0.0829
dcGTX3 (fM)				
C-I	0.69	0.174	3.97	0.0002
C-IV	0.63	0.174	3.66	0.0007
I-IV	-0.05	0.174	-0.30	0.9502
Beginning – Peak	-0.10	0.174	-0.60	0.8221
Beginning – Recovery	0.58	0.174	3.32	0.0026
Peak - Recovery	0.68	0.174	3.92	0.0003
dcSTX (fM)				

C-I	0.449	0.124	3.62	0.0008
C-IV	0.270	0.124	2.18	0.0737
I-IV	-0.178	0.124	-1.44	0.3203
Beginning – Peak	0.389	0.124	3.15	0.0047
Beginning – Recovery	0.668	0.124	5.40	<.0001
Peak - Recovery	0.279	0.124	2.26	0.0624
dcSTX (MF)				
Beginning – Peak	-3.04	0.587	-5.18	<.0001
Beginning – Recovery	-1.18	0.587	-2.01	0.1095
Peak - Recovery	1.86	0.587	3.17	0.0044
C1 (fM)				
C-I	2.38	0.982	2.42	0.0409
C-IV	1.80	0.982	1.84	0.1575
I-IV	-0.57	0.982	-0.58	0.8285
C1 (MF)				
Beginning – Peak	-3.50	1.77	2.16	0.1172
Beginning – Recovery	2.86	1.77	-0.41	0.2380
Peak - Recovery	6.36	1.77	5.02	0.0009
C2 (fM)				
C-I	2.82	0.95	2.97	0.0084
C-IV	2.06	0.95	2.17	0.0763
I-IV	-0.76	0.95	-0.80	0.7045
Beginning – Peak	3.90	0.95	4.11	0.0001
Beginning – Recovery	4.98	0.95	5.24	<.0001
Peak - Recovery	1.07	0.95	1.13	0.4949
C2 (MF)				
C-I	2.28	1.4	1.63	0.2340
C-IV	3.54	1.4	2.52	0.0311
I-IV	1.26	1.4	0.90	0.6423
Beginning – Peak	3.55	1.4	2.54	0.0302
Beginning – Recovery	3.91	1.4	2.79	0.0146
Peak - Recovery	0.36	1.4	0.25	0.9653
C3 (fM)				
Beginning – Peak	0.078	0.658	-1.98	0.0783
Beginning – Recovery	0.021	0.658	1.62	0.0213
Peak - Recovery	0.500	0.658	3.60	0.8713
C4 (fM)				
C-I	7.52	2.25	3.35	0.0023
C-IV	5.65	2.25	2.52	0.0319
I-IV	-1.87	2.25	-0.83	0.6818
Beginning – Peak	11.36	2.25	5.06	<.0001
Beginning – Recovery	13.19	2.25	5.87	<.0001
Peak - Recovery	1.83	2.25	0.82	0.6940
C4 (MF)				
Beginning – Peak	8.26	2.62	3.15	0.0046
Beginning – Recovery	-2.34	2.62	-0.89	0.6447

Peak - Recovery	-10.60	2.62	-4.04	0.0002
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P-values < 0.05 are represented in bold.

Supplemental Table S2. MRM transitions used for PST analogues.

PST analog	Ion mode	MRM transitions
C1, 2	ESI-	474 → 431; 394; 351
C3, 4	ESI-	490 → 410; 392
dcGTX2, 3	ESI-	351 → 333; 293
GTX2, 3	ESI-	394 → 376; 351; 333; 300
GTX1, 4	ESI-	410 → 367; 349
GTX5	ESI-	378 → 360; 318; 306; 301; 122
GTX6	ESI-	394 → 376; 351; 333; 300
dcSTX	ESI+	257 → 239; 197; 126
dcNEO	ESI+	273 → 255; 241; 213
STX	ESI+	300 → 282; 266; 221; 216; 204
NEO	ESI+	316 → 298; 273

Supplemental Table S3. LOD and LOQ obtained in the present study.

	nmol L ⁻¹	
Compound	LOD	LOQ
dcGTX2	0,329	1,097
dcGTX3	0,045	0,149
GTX5	0,444	1,479
GTX2	0,147	0,491

GTX3	0,657	2,189
GTX6	0,023	0,076
GTX1	0,028	0,093
GTX4	0,366	1,22
C3	0,381	1,271
C4	0,361	1,203
C1	0,083	0,276
C2	0,064	0,212
dcSTX	0,144	0,48
dcNEO	0,193	0,642
STX	0,003	0,01
NEO	0,007	0,022

Supplemental Figure S1. Correlation plots between a) all cell parameters and b) PSTs produced by *Gymnodinium catenatum* under control conditions and marine heatwave categories I and IV.

