

Table Supplementary 1: ANOVA results after experiment testing for the effect of treatments on the copper accumulation, maximal quantum yield (F_v/F_m), photosynthetic efficiency (α_{ETR}), maximal electron transport rate (ETR_{max}), irradiance of saturation (E_k_{ETR}) and Maximal non-photochemical quenching (NPQ_{max}) of *Ulva compressa*. $p < 0.05^{**}$

		<i>Ulva Compressa</i>			
		<i>df</i>	<i>MS</i>	<i>F</i>	<i>P</i>
Copper	Time 1	Treatments	8	1697.71	3205.46
		Res	18	0.53	
	Time 2	Treatments	8	2264.59	3952.9
		Res	18	0.57	
F_v/F_m	Time 3	Treatments	8	3092.48	15272.6
		Res	18	0.20	
	Time 4	Treatments	8	64710.83	20829
		Res	18	3.11	
α_{ETR}	Time 1	Treatments	8	0.005	1.61
		Res	18	0.003	
	Time 2	Treatments	8	0.005	1.48
		Res	18	0.003	
ETR_{max}	Time 3	Treatments	8	0.009	2.05
		Res	18	0.004	
	Time 4	Treatments	8	0.004	1.24
		Res	18	0.003	
E_k_{ETR}	Time 1	Treatments	8	0.00050	12.95
		Res	18	0.00004	
	Time 2	Treatments	8	0.00034	5.54
		Res	18	0.00006	
NPQ_{max}	Time 3	Treatments	8	0.00053	15.58
		Res	18	0.00003	
	Time 4	Treatments	8	0.00068	8.62
		Res	18	0.00008	

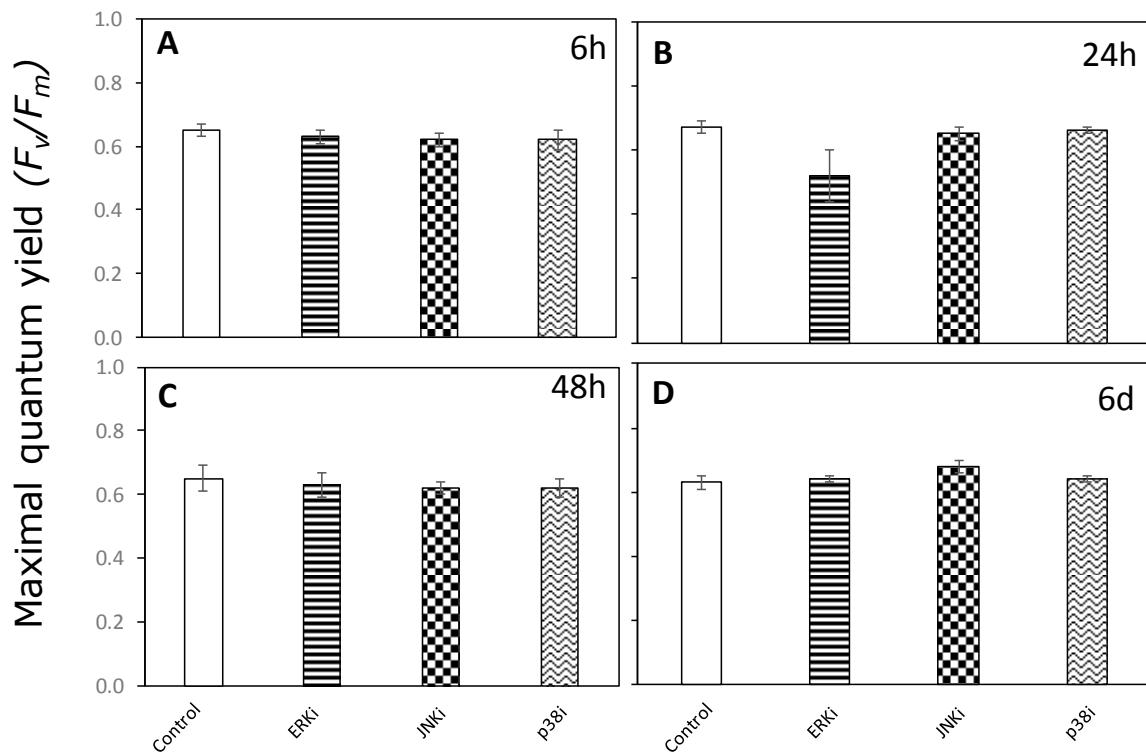
Res: Residual

Table Supplementary 2 : ANOVA results after experiment testing for the effect of treatments with *U. compressa*; in control conditions, inhibitor ERK, inhibitor JNK and inhibitor p38. In response to physiological variables: maximal quantum yield (F_v/F_m), photosynthetic efficiency (α_{ETR}), maximal electron transport rate (ETR_{max}), irradiance of saturation (Ek_{ETR}) and Maximal non-photochemical quenching (NPQ_{max}) of *Ulva compressa*. $p<0.05^{**}$

		<i>Ulva Compressa</i>			
		<i>df</i>	<i>MS</i>	<i>F</i>	<i>P</i>
F_v/F_m	<i>Time 1</i>	<i>Treatments</i>	4	0.0009	0.64
		<i>Res</i>	10	0.0014	
	<i>Time 2</i>	<i>Treatments</i>	4	0.0122	1.45
		<i>Res</i>	10	0.0084	0.29
α_{ETR}	<i>Time 3</i>	<i>Treatments</i>	4	0.0021	1.13
		<i>Res</i>	10	0.0019	0.40
	<i>Time 4</i>	<i>Treatments</i>	4	0.0049	1.00
		<i>Res</i>	10	0.0049	0.45
ETR_{max}	<i>Time 1</i>	<i>Treatments</i>	4	0.00008	1.30
		<i>Res</i>	10	0.00006	0.33
	<i>Time 2</i>	<i>Treatments</i>	4	0.00016	0.79
		<i>Res</i>	10	0.00020	0.55
Ek_{ETR}	<i>Time 3</i>	<i>Treatments</i>	4	0.00005	3.02
		<i>Res</i>	10	0.00002	0.07
	<i>Time 4</i>	<i>Treatments</i>	4	0.00012	1.14
		<i>Res</i>	10	0.000	0.39
NPQ_{max}	<i>Time 1</i>	<i>Treatments</i>	4	101.9	4.37
		<i>Res</i>	10	23.3	
	<i>Time 2</i>	<i>Treatments</i>	4	113.2	1.89
		<i>Res</i>	10	59.8	0.19
$Time 3$	<i>Treatments</i>	4	24.1	1.17	0.38
		<i>Res</i>	10	20.6	
	<i>Time 4</i>	<i>Treatments</i>	4	20.7	0.43
		<i>Res</i>	10	48.2	0.78
$Time 1$	<i>Treatments</i>	4	10425.5	3.25	0.06
		<i>Res</i>	10	3204.7	
	<i>Time 2</i>	<i>Treatments</i>	4	8777.1	1.29
		<i>Res</i>	10	6814.9	0.34
$Time 3$	<i>Treatments</i>	4	2983.2	1.17	0.38
		<i>Res</i>	10	2552.8	
	<i>Time 4</i>	<i>Treatments</i>	4	2544.8	0.52
		<i>Res</i>	10	4855.5	0.72
$Time 1$	<i>Treatments</i>	4	0.358	1.47	0.28
		<i>Res</i>	10	0.243	
	<i>Time 2</i>	<i>Treatments</i>	4	0.105	1.03
		<i>Res</i>	10	0.102	0.44
$Time 3$	<i>Treatments</i>	4	0.025	2.47	0.11
		<i>Res</i>	10	0.010	
	<i>Time 4</i>	<i>Treatments</i>	4	2614293.6	1.00
		<i>Res</i>	10	2614216.2	0.45

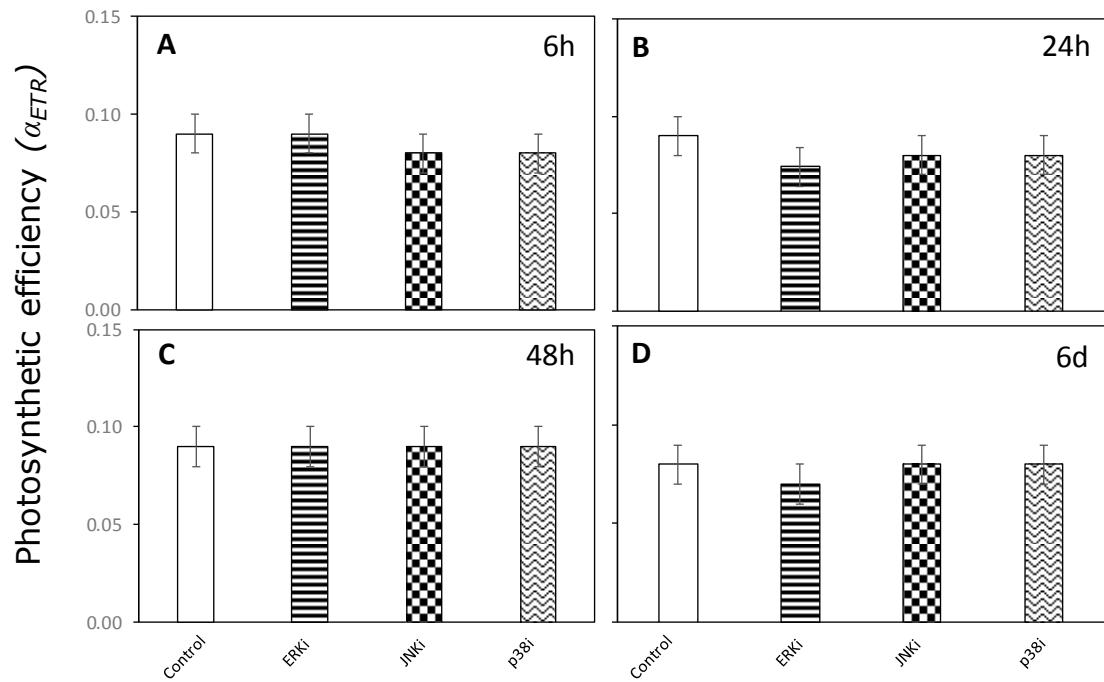
Res: Residual

Supplementary figures



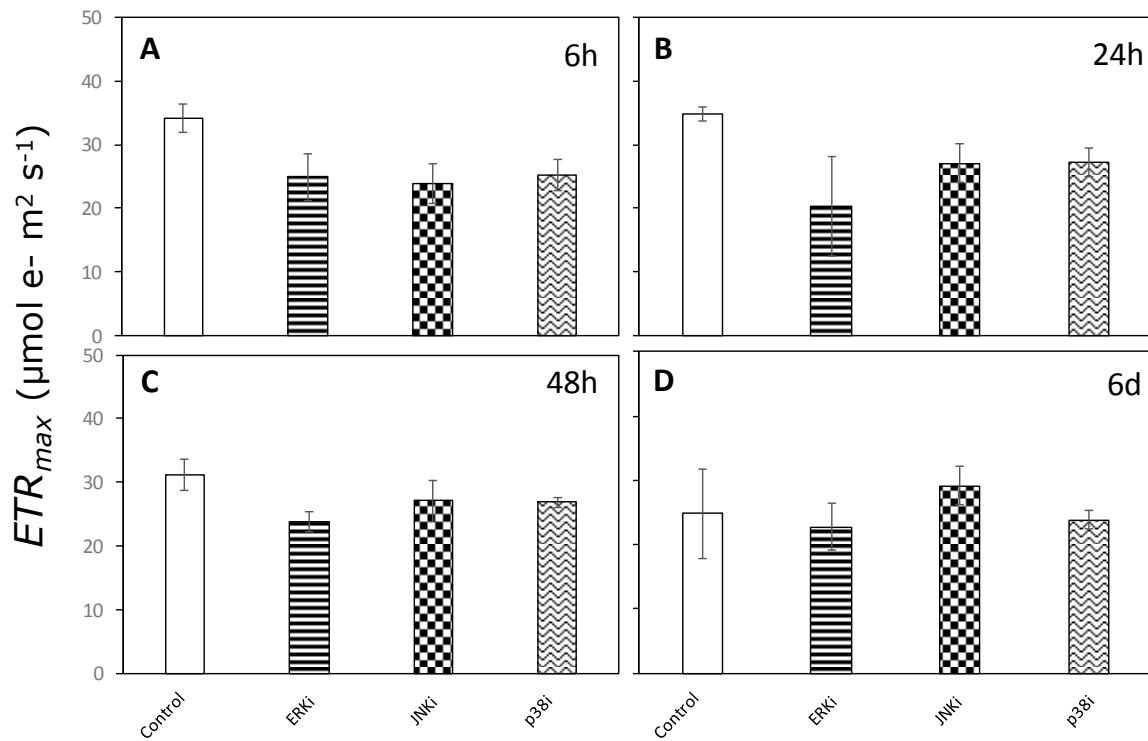
Supplementary Figure 1.

Supplementary figure 1. Maximum quantum yield of PSII (F_v/F_m) in *U. compressa* exposed to control conditions and MAPK inhibitors. Treatments consisted in: T1) Control conditions (no copper added); T2) 5 μ M MAPK ERK inhibitor PD98059 in seawater (ERKi) ; T3) 5 μ M MAPK JNK inhibitor SP600125 in seawater (JNKi); T4) MAPK p38 inhibitor SB203580 in seawater (p38i). Samples were analyzed after 6 h (A), 24 h (B), 48 h (C) and 6 d (D) treatments. Treatments did not present significant differences at 95% confidence interval ($p > 0.05$). Plots are represented as mean \pm SE ($n = 3$).



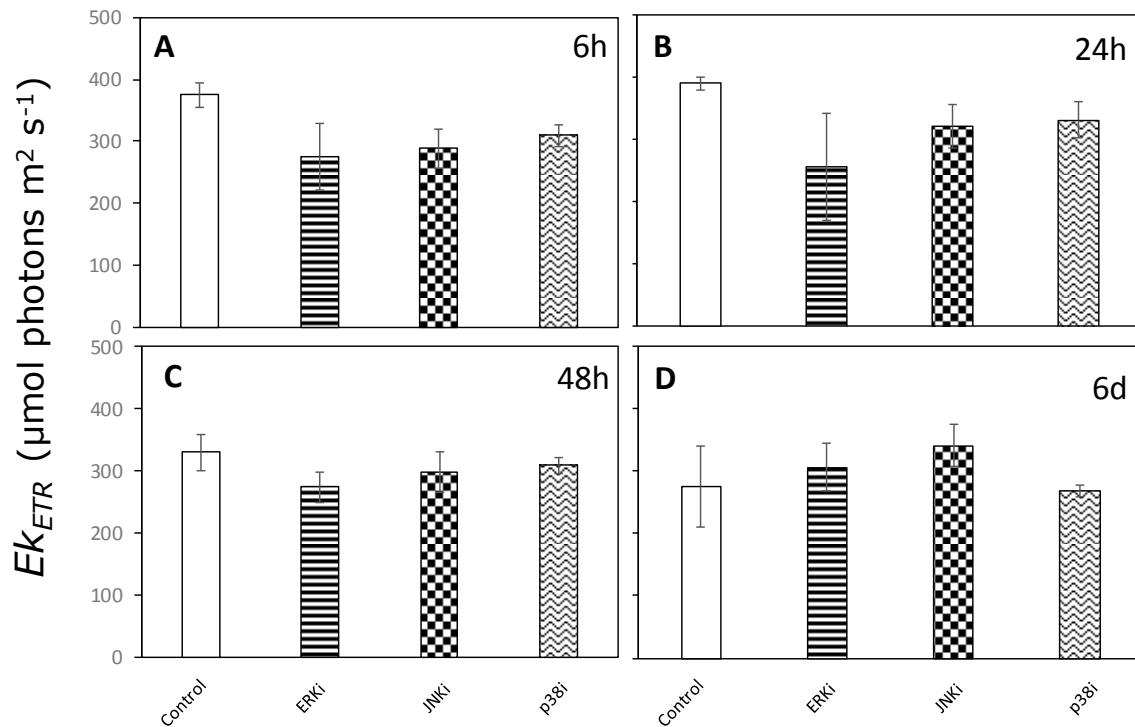
Supplementary Figure 2.

Supplementary figure 2. Photosynthetic efficiency (α_{ETR}) in *U. compressa* exposed to control conditions and MAPK inhibitors. Treatments consisted in: T1) Control conditions (no copper added); T2) 5 μ M MAPK ERK inhibitor PD98059 in seawater (ERKi) ; T3) 5 μ M MAPK JNK inhibitor SP600125 in seawater (JNKi); T4) MAPK p38 inhibitor SB203580 in seawater (p38i). Samples were analyzed after 6 h (A), 24 h (B), 48 h (C) and 6 d (D) treatments. Treatments did not present significant differences at 95% confidence interval ($p > 0.05$). Plots are represented as mean \pm SE ($n = 3$).



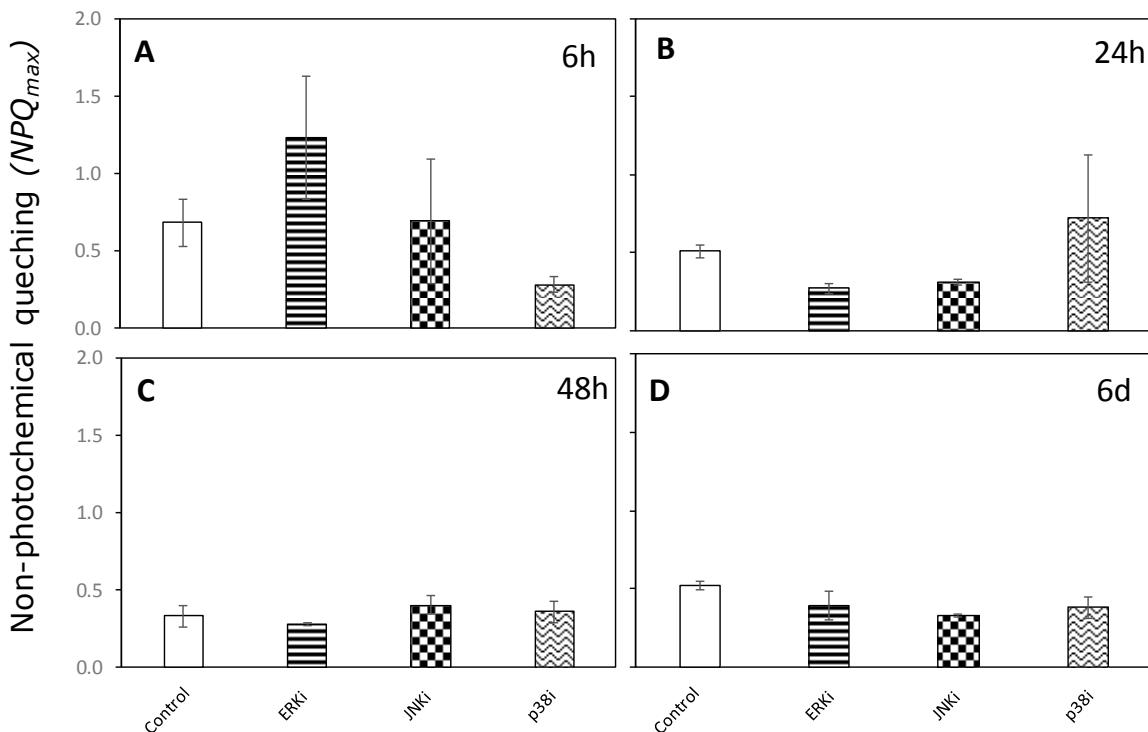
Supplementary Figure 3.

Supplementary figure 3. Maximal electron transport rate (ETR_{max}) in *U. compressa* exposed to control conditions and MAPK inhibitors. Treatments consisted in: T1) Control conditions (no copper added); T2) 5 μM MAPK ERK inhibitor PD98059 in seawater (ERKi) ; T3) 5 μM MAPK JNK inhibitor SP600125 in seawater (JNKi); T4) MAPK p38 inhibitor SB203580 in seawater (p38i). Samples were analyzed after 6 h (A), 24 h (B), 48 h (C) and 6 d (D) treatments. Treatments did not present significant differences at 95% confidence interval ($p > 0.05$). Plots are represented as mean ± SE ($n = 3$).



Supplementary Figure 4.

Supplementary figure 4. Saturation of the irradiance of ETR (Ek_{ETR}) in *U. compressa* exposed to control conditions and MAPK inhibitors. Treatments consisted in: T1) Control conditions (no copper added); T2) 5 μ M MAPK ERK inhibitor PD98059 in seawater (ERKi) ; T3) 5 μ M MAPK JNK inhibitor SP600125 in seawater (JNKi); T4) MAPK p38 inhibitor SB203580 in seawater (p38i). Samples were analyzed after 6 h (A), 24 h (B), 48 h (C) and 6 d (D) treatments. Treatments did not present significant differences at 95% confidence interval ($p > 0.05$). Plots are represented as mean \pm SE ($n = 3$).



Supplementary Figure 5.

Supplementary figure 5. Maximal non-photochemical quenching (NPQ_{max}) in *U. compressa* exposed to control conditions and MAPK inhibitors. Treatments consisted in: T1) Control conditions (no copper added); T2) 5 μ M MAPK ERK inhibitor PD98059 in seawater (ERKi) ; T3) 5 μ M MAPK JNK inhibitor SP600125 in seawater (JNKi); T4) MAPK p38 inhibitor SB203580 in seawater (p38i). Samples were analyzed after 6 h (A), 24 h (B), 48 h (C) and 6 d (D) treatments. Treatments did not present significant differences at 95% confidence interval ($p > 0.05$). Plots are represented as mean \pm SE ($n = 3$).