

## **Supplementary data**

### **Evaluation of selected tropical marine microalgal cultures for use in biophotovoltaic**

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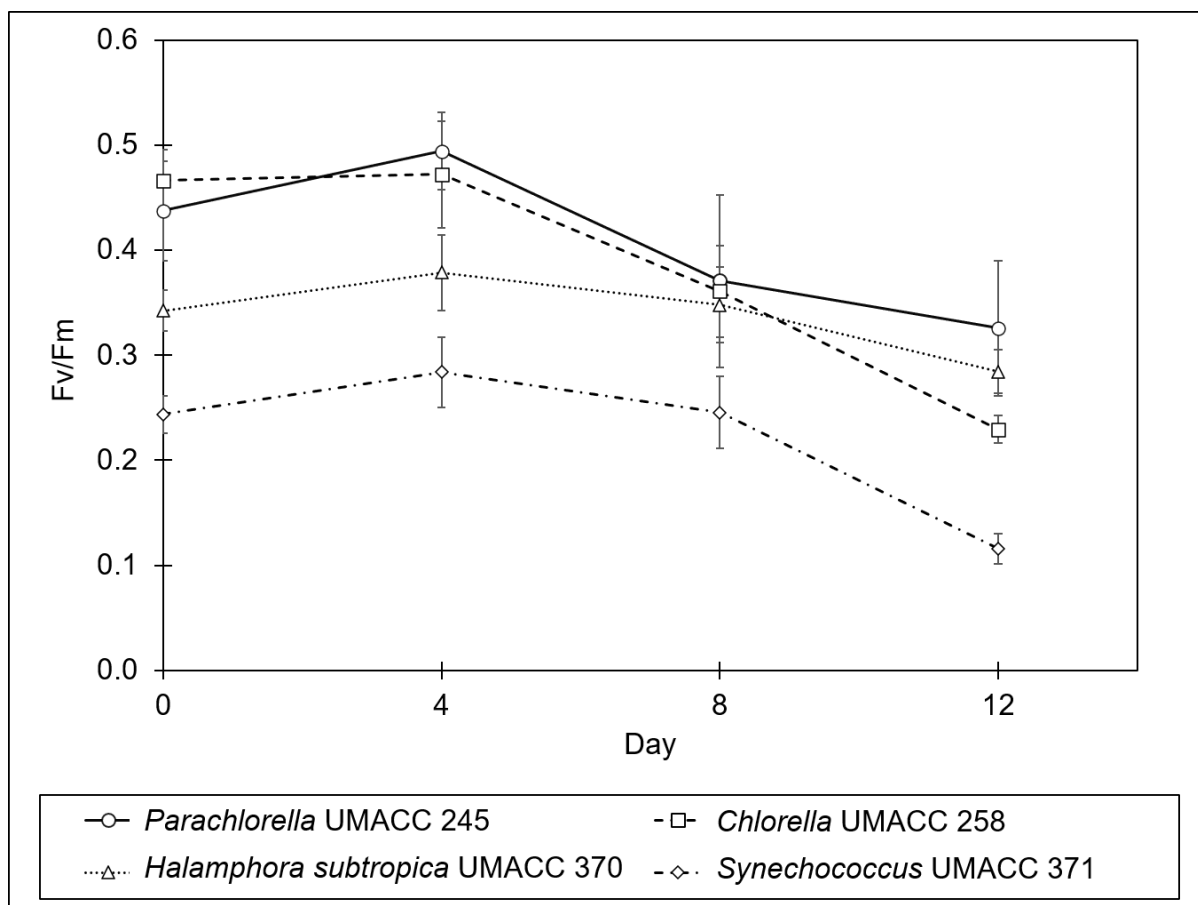
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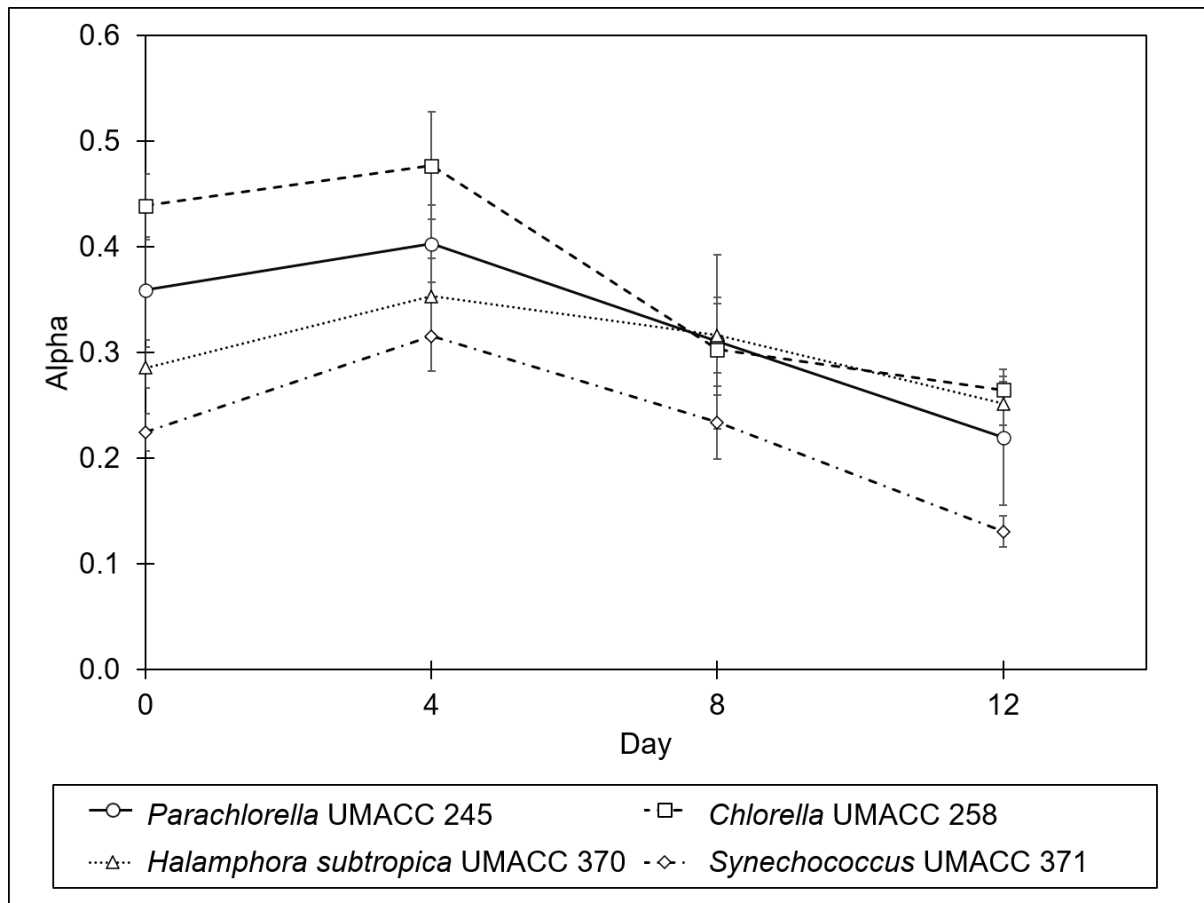
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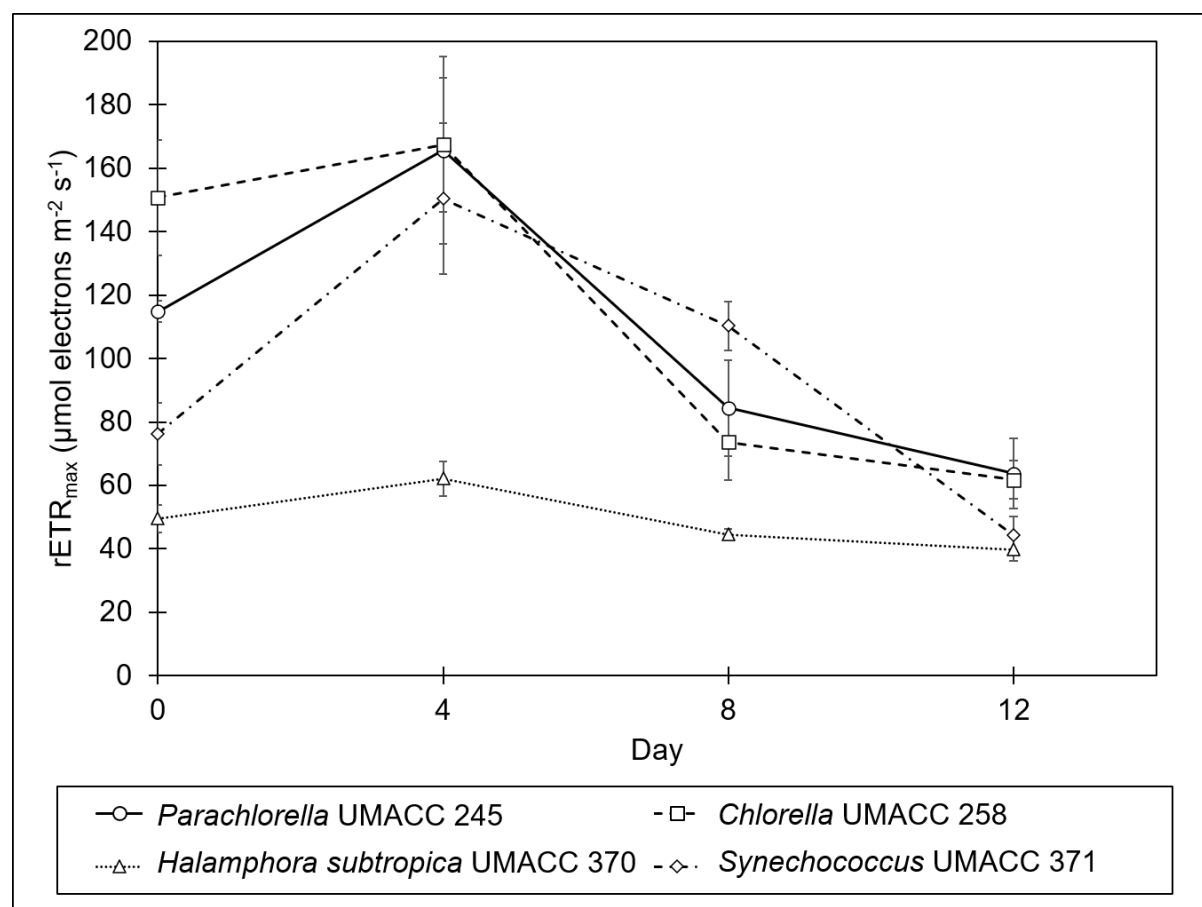
**Figure S1** Fv/Fm values of all four strains on Days 0, 4, 8 and 12 of the experiment; data as means  $\pm$  S.D. (n = 5)



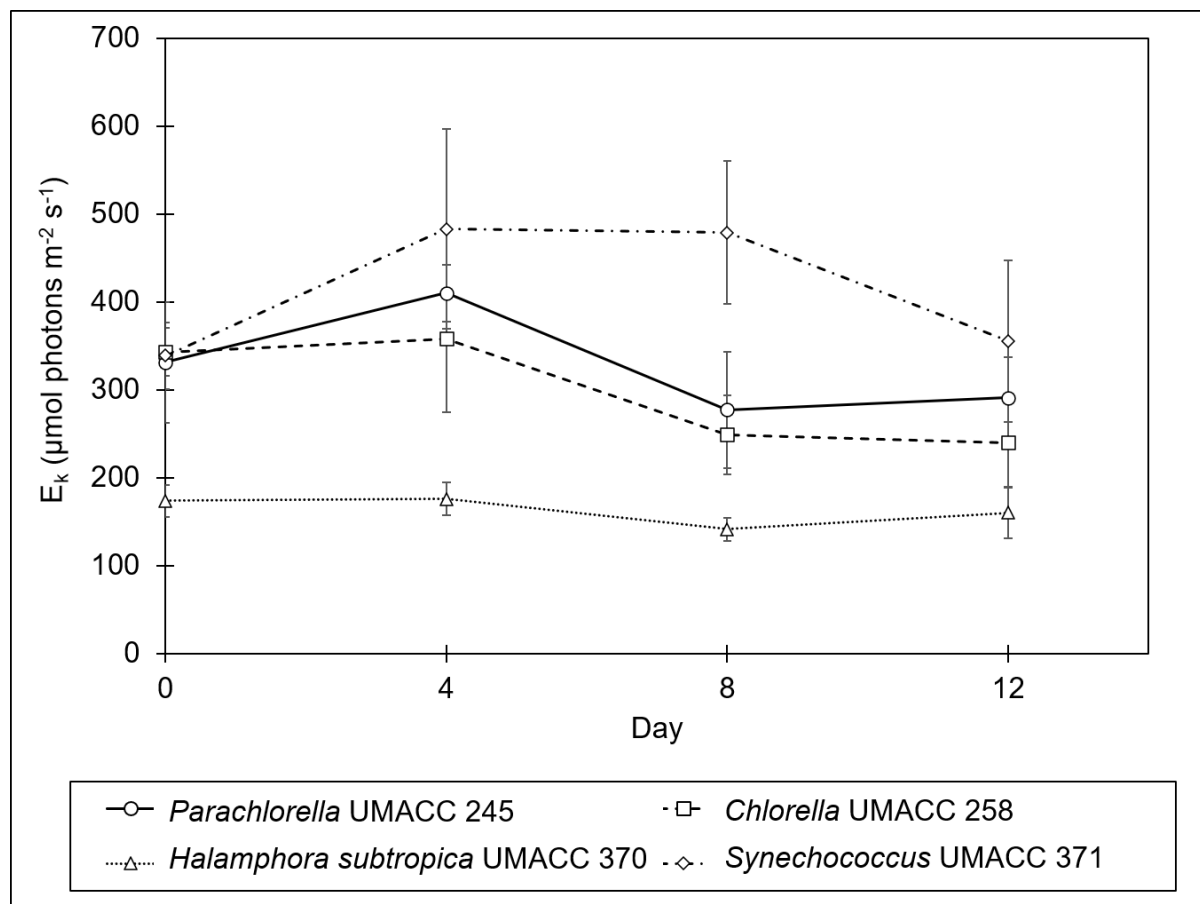
**Figure S2** Comparison of the alpha values between the microalgal strains on Days 0, 4, 8 and 12 of the experiment; data as means  $\pm$  S.D. (n = 5)



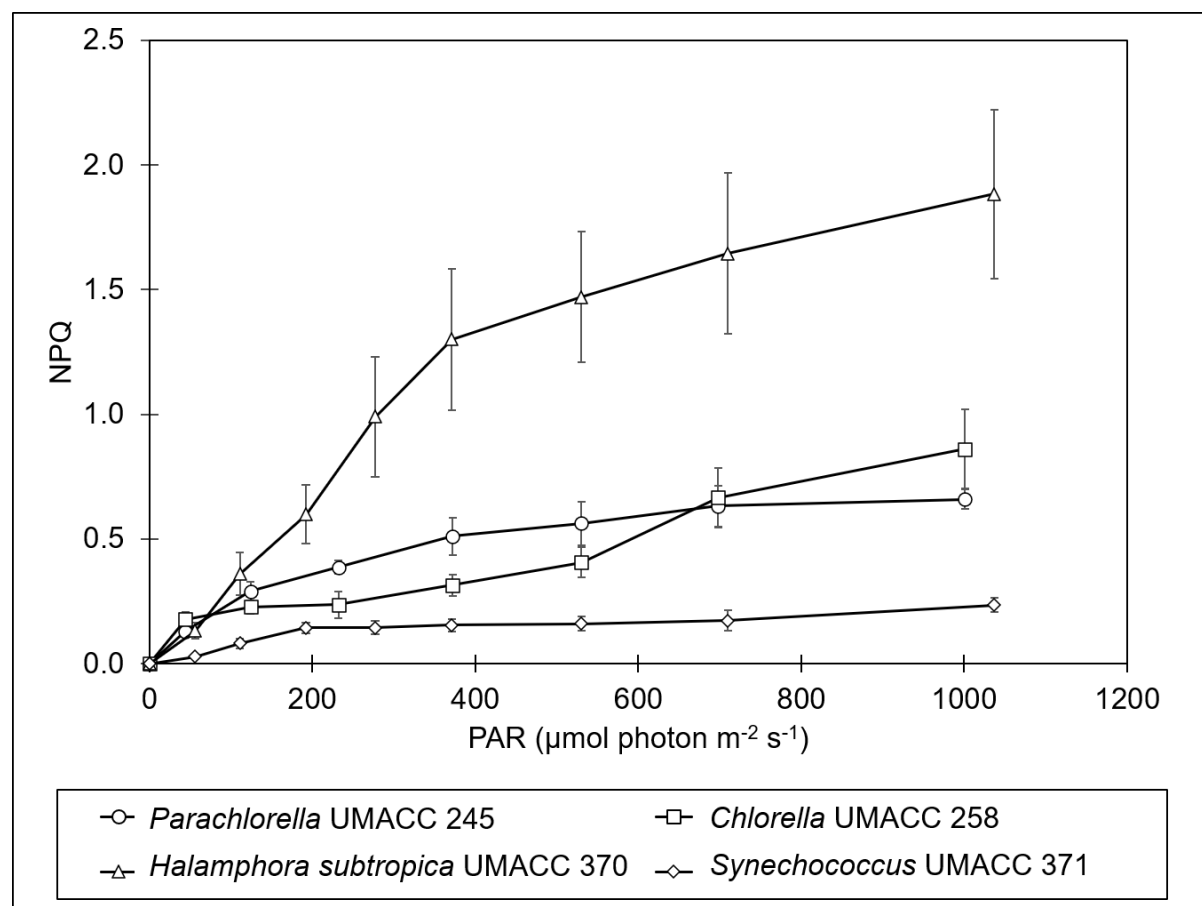
**Figure S3**  $rETR_{max}$  values for all strains on various days of the experiment; data as means  $\pm$  S.D. (n = 5)



**Figure S4** Comparison of the  $E_k$  values between the microalgal strains on different days of the experiment; data as means  $\pm$  S.D. (n = 5)



**Figure S5** Comparison of the NPQ values recorded by strains on Day 4 of experiment; data as means  $\pm$  S.D. (n = 5)



**Table S1** Highest values of maximum current density and maximum power density for all strains at irradiance level of  $90 \mu\text{mol photons m}^{-2} \text{s}^{-1}$ , data as means  $\pm$  S.D. (n = 5). Difference between alphabets indicate significant differences between different strains (ANOVA, Tukey HSD test,  $p < 0.05$ )

Strain	Maximum Current Density ( $\text{mA m}^{-2}$ )	Maximum Power Density ( $\text{mW m}^{-2}$ )
<i>Parachlorella</i> UMACC 245	$0.423 \pm 0.037^c$	$0.017 \pm 0.002^c$
<i>Chlorella</i> UMACC 258	$1.412 \pm 0.124^a$	$0.108 \pm 0.023^a$
<i>Halamphora</i> <i>subtropica</i> UMACC 370	$1.164 \pm 0.075^b$	$0.090 \pm 0.018^{ab}$
<i>Synechococcus</i> UMACC 371	$1.157 \pm 0.104^b$	$0.065 \pm 0.015^b$
Control (Prov medium only)	$1.36 \times 10^{-2} \pm 2.99 \times 10^{-3}^d$	$1.56 \times 10^{-4} \pm 3.68 \times 10^{-8}^d$

**Table S2**  $F_v/F_m$  values for all strains on respective days of the experiment, data as means  $\pm$  S.D. (n = 5). Difference between alphabets indicate significant differences between different strains (ANOVA, Tukey HSD test,  $p < 0.05$ )

Day	$F_v/F_m$ values for strain			
	<i>Parachlorella</i> UMACC 245	<i>Chlorella</i> UMACC 258	<i>Halamphora</i> <i>subtropica</i> UMACC 370	<i>Synechococcus</i> UMACC 371
0	$0.437 \pm 0.047^{abc}$	$0.466 \pm 0.030^{ab}$	$0.342 \pm 0.019^{de}$	$0.244 \pm 0.018^{fg}$
4	$0.494 \pm 0.037^a$	$0.472 \pm 0.051^a$	$0.379 \pm 0.036^{bcd}$	$0.284 \pm 0.033^{efg}$
8	$0.370 \pm 0.082^{cde}$	$0.361 \pm 0.043^{cde}$	$0.348 \pm 0.036^{cde}$	$0.245 \pm 0.034^{fg}$
12	$0.326 \pm 0.064^{def}$	$0.229 \pm 0.013^g$	$0.284 \pm 0.020^{efg}$	$0.116 \pm 0.014^h$

**Table S3** Alpha values for all strains on respective days of the experiment, data as means  $\pm$  S.D. (n = 5). Difference between alphabets indicate significant differences between different strains (ANOVA, Tukey HSD test,  $p < 0.05$ )

Day	Alpha values for strain			
	<i>Parachlorella</i> UMACC 245	<i>Chlorella</i> UMACC 258	<i>Halamphora</i> <i>subtropica</i> UMACC 370	<i>Synechococcus</i> UMACC 371
0	0.359 $\pm$ 0.080 <sup>bcd</sup>	0.439 $\pm$ 0.033 <sup>bc</sup>	0.286 $\pm$ 0.016 <sup>de</sup>	0.225 $\pm$ 0.012 <sup>ef</sup>
4	0.403 $\pm$ 0.044 <sup>abc</sup>	0.477 $\pm$ 0.063 <sup>a</sup>	0.354 $\pm$ 0.019 <sup>bcd</sup>	0.316 $\pm$ 0.024 <sup>cde</sup>
8	0.311 $\pm$ 0.049 <sup>cde</sup>	0.303 $\pm$ 0.071 <sup>de</sup>	0.317 $\pm$ 0.031 <sup>cde</sup>	0.234 $\pm$ 0.030 <sup>e</sup>
12	0.220 $\pm$ 0.032 <sup>ef</sup>	0.265 $\pm$ 0.050 <sup>de</sup>	0.252 $\pm$ 0.028 <sup>e</sup>	0.131 $\pm$ 0.039 <sup>f</sup>



**Table S4** rETR<sub>max</sub> for all strains on respective days of the experiment, data as means  $\pm$  S.D. (n = 5). Difference between alphabets indicate significant differences between different strains (ANOVA, Tukey HSD test,  $p < 0.05$ )

Day	rETR <sub>max</sub> values for strain ( $\mu\text{mol electrons m}^{-2} \text{s}^{-1}$ )			
	<i>Parachlorella</i> UMACC 245	<i>Chlorella</i> UMACC 258	<i>Halamphora</i> <i>subtropica</i> UMACC 370	<i>Synechococcus</i> UMACC 371
0	114.821 $\pm$ 3.389 <sup>b</sup>	150.773 $\pm$ 18.289 <sup>a</sup>	49.549 $\pm$ 4.409 <sup>def</sup>	76.283 $\pm$ 9.819 <sup>cd</sup>
4	165.683 $\pm$ 29.496 <sup>a</sup>	167.449 $\pm$ 21.068 <sup>a</sup>	62.139 $\pm$ 5.476 <sup>cdef</sup>	150.411 $\pm$ 23.891 <sup>a</sup>
8	84.393 $\pm$ 15.199 <sup>bc</sup>	73.609 $\pm$ 11.853 <sup>def</sup>	44.532 $\pm$ 1.659 <sup>ef</sup>	110.263 $\pm$ 7.794 <sup>b</sup>
12	63.690 $\pm$ 11.106 <sup>cdef</sup>	61.741 $\pm$ 6.096 <sup>cdef</sup>	39.749 $\pm$ 3.682 <sup>f</sup>	44.165 $\pm$ 5.895 <sup>ef</sup>

**Table S5** E<sub>k</sub> for all strains on respective days of the experiment; data as means  $\pm$  S.D. (n = 5). Difference between alphabets indicate significant differences between different strains (ANOVA, Tukey HSD test,  $p < 0.05$ )

Day	E <sub>k</sub> for strain ( $\mu\text{mol photons m}^{-2} \text{s}^{-1}$ )			
	<i>Parachlorella</i> UMACC 245	<i>Chlorella</i> UMACC 258	<i>Halamphora</i> <i>subtropica</i> UMACC 370	<i>Synechococcus</i> UMACC 371
0	331.650 $\pm$ 68.741 <sup>bc</sup>	342.927 $\pm$ 27.256 <sup>bc</sup>	173.740 $\pm$ 18.564 <sup>de</sup>	338.957 $\pm$ 37.817 <sup>bc</sup>
4	410.219 $\pm$ 32.031 <sup>ab</sup>	358.240 $\pm$ 84.023 <sup>abc</sup>	176.148 $\pm$ 18.410 <sup>de</sup>	483.111 $\pm$ 113.587 <sup>a</sup>
8	277.330 $\pm$ 66.238 <sup>bcd</sup>	249.161 $\pm$ 44.840 <sup>cde</sup>	141.614 $\pm$ 12.884 <sup>e</sup>	478.755 $\pm$ 81.303 <sup>a</sup>
12	291.356 $\pm$ 46.063 <sup>bcd</sup>	239.881 $\pm$ 49.794 <sup>cde</sup>	160.254 $\pm$ 28.993 <sup>de</sup>	355.525 $\pm$ 91.491 <sup>abc</sup>