

(a) $[\text{Ca}^{2+}]$ manipulation experiments with *M. edulis*-like

$[\text{Ca}^{2+}]$ treatment	$[\text{Ca}^{2+}]$ (mmol L^{-1})
< 1 mM	0.86 ± 0.02
1.5–2 mM	1.56 ± 0.03
2.0–2.5 mM	2.19 ± 0.03
2.5–3 mM	2.82 ± 0.05
3.0–4.0 mM	3.62 ± 0.06
4.0–5.0 mM	4.42 ± 0.11
5.0–6.0 mM	5.74 ± 0.07
6.0–8.0 mM	6.83 ± 0.25
> 8.0 mM	9.22 ± 0.10

(b) $[\text{Ca}^{2+}]$ manipulation experiments with *M. trossulus*-like

$[\text{Ca}^{2+}]$ treatment	$[\text{Ca}^{2+}]$ (mmol L^{-1})	$\Omega_{\text{Aragonite}}$	$[\text{Ca}^{2+}][\text{HCO}_3^-] / [\text{H}^+]$ ($\text{mmol})(\text{mol}) / (\mu\text{mol})$
< 1 mM	0.40 ± 0.02	0.16 ± 0.02	0.08 ± 0.01
1 mM	1.07 ± 0.04	0.43 ± 0.00	0.20 ± 0.01
1–1.5 mM	1.36 ± 0.00	0.51 ± 0.03	0.24 ± 0.01
1.5–2 mM	1.79 ± 0.03	0.62 ± 0.04	0.29 ± 0.02
2.5–3 mM	2.94 ± 0.03	0.98 ± 0.07	0.46 ± 0.03
3.0–4.0 mM	3.74 ± 0.04	1.23 ± 0.06	0.58 ± 0.03
> 5.0 mM	5.78 ± 0.01	1.86 ± 0.11	0.88 ± 0.04

(c) $[\text{Ca}^{2+}]$ and carbonate systems manipulation experiments with *M. edulis*-like

treatment	$[\text{Ca}^{2+}]$ (mmol L^{-1})	$\Omega_{\text{Aragonite}}$	$[\text{Ca}^{2+}][\text{HCO}_3^-] / [\text{H}^+]$ ($\text{mmol})(\text{mol}) / (\mu\text{mol})$
control + high C_T	0.93 ± 0.02	0.26 ± 0.07	0.18 ± 0.05
	1.55 ± 0.03	0.45 ± 0.09	0.31 ± 0.06
	2.25 ± 0.06	0.64 ± 0.15	0.44 ± 0.10
	2.99 ± 0.05	0.80 ± 0.22	0.55 ± 0.15
	3.69 ± 0.04	1.05 ± 0.23	0.73 ± 0.16
	5.45 ± 0.70	1.36 ± 0.04	0.94 ± 0.02
	8.69 ± 1.03	2.63	1.8
low C_T	0.92 ± 0.01	0.06 ± 0.01	0.04 ± 0.01
	1.59 ± 0.05	0.10 ± 0.03	0.07 ± 0.02
	2.25 ± 0.08	0.14 ± 0.03	0.10 ± 0.02
	2.78 ± 0.21	0.17 ± 0.02	0.12 ± 0.01
	3.37 ± 0.38	0.20 ± 0.01	0.14 ± 0.01
	5.88 ± 0.29	0.36 ± 0.06	0.25 ± 0.05