

Table 1. Cellular and Rubisco properties of *Cyanobium* spp. and *Synechococcus* spp.

Measured cellular and Rubisco properties of *Cyanobium* spp. PCC7001 and *Synechococcus* spp. PCC7942 grown at both high and low CO₂. Data are both measured experimentally and derived from experimental results. Values represent the means and SD of three replicates.

Property ^a	<i>Synechococcus</i> spp. PCC7942 (β)		<i>Cyanobium</i> spp. PCC7001 (α)	
	High CO ₂	Low CO ₂	High CO ₂	Low CO ₂
Cellular properties				
Chl content (fg cell ⁻¹)	14.1 ± 0.8	11.1 ± 0.1	8.5 ± 0.5	5.6 ± 0.3
Cell volume (μL mg Chl ⁻¹)	58.6 ± 4.5	63.5 ± 6.1	57.0 ± 1.2	45.0 ± 2.6
Cell volume (μL cell ⁻¹)	8.3 × 10 ⁻¹⁰	7.0 × 10 ⁻¹⁰	4.8 × 10 ⁻¹⁰	2.5 × 10 ⁻¹⁰
Rubisco active site density (nmol mg Chl ⁻¹) ^b	6.9 ± 1.7	14.3 ± 1.6	6.1 ± 1.0	9.8 ± 1.6
Rubisco catalytic properties ^c				
K_{CO_2}	169.2 ± 8.0		169.0 ± 6.9	
K_{RuBP}	69.9 ± 5.7		63.3 ± 4.9	
k_{cat} (s ⁻¹)	14.4 ± 0.4		9.0 ± 0.1	
Derived properties				
Rubisco active site concentration (nmol cell ⁻¹)	9.7 × 10 ⁻¹¹	1.6 × 10 ⁻¹⁰	5.2 × 10 ⁻¹¹	5.5 × 10 ⁻¹¹
Rubisco active site concentration (mM)	0.12	0.23	0.11	0.22
Rubisco active sites per cell	5.86 × 10 ⁴	9.56 × 10 ⁴	3.12 × 10 ⁴	3.30 × 10 ⁴
Rubisco holoenzymes per cell	7.32 × 10 ³	1.19 × 10 ⁴	3.90 × 10 ³	4.13 × 10 ³
Rubisco V_{max} (μmol mg Chl ⁻¹ h ⁻¹)	358	741	198	318
Rubisco V_{max} (fmol cell ⁻¹ h ⁻¹)	5.0	8.2	1.7	1.8

^aCellular properties and Rubisco catalytic properties were determined experimentally as outlined in "Materials and Methods." All other properties are derived from the measured values. ^bRubisco active site densities were measured in crude cell extracts. ^cRubisco kinetic parameters were measured from purified protein extracted from high-CO₂-grown cells of each species.