

TABLE 3 Amounts of cytoplasmic water and osmotic properties of *E. coli* grown at different osmolalities*

Osmolality of Growth Medium	$\bar{V}_{\text{cyto}}^{\text{wa}}$	$\bar{V}_{\text{b, cyto}}^{\text{wa}}$ *	$(\phi \sum n_j)_{\text{cyto}}$	$\Delta\Pi^\dagger$ (atm)	ε^\ddagger (atm)
0.03 Osm (VLOM)	2.53 ± 0.08	0.45 ± 0.03	0.31 ± 0.04	3.1 ± 0.4	4.9 ± 0.9
0.10 Osm (MBM) [§]	2.19 ± 0.11	0.40 ± 0.02	0.29 ± 0.01	1.5 ± 0.3	3.4 ± 0.7
0.28 Osm [§] (MBM+0.1 M NaCl)	2.08 ± 0.06	0.38 ± 0.08	0.52 ± 0.07	0.7 ± 1.1	1.7 ± 2.7

*The average and standard deviation of the values shown plus the value of $\bar{V}_{\text{b, cyto}}^{\text{wa}}$ determined for cells grown at 1.02 Osm in MBM+0.5 M NaCl+1 mM betaine ($0.40 \pm 0.05 \mu\text{L}/\text{mg DW}$; Cayley et al., 1992) is $0.41 \pm 0.03 \mu\text{L}/\text{mg DW}$.

[†]Turgor pressure was calculated as the difference $\Delta\Pi = \Pi_{\text{cyto}} - \Pi_{\text{ex}} = RT[(\phi \sum n_j)_{\text{cyto}}/\bar{V}_{\text{t, cyto}}^{\text{wa}} - \text{Osm}_{\text{ex}}]$, where $R = 0.0821 \text{ L atm mol}^{-1} \text{ K}^{-1}$, $T = 310 \text{ K}$, and $\bar{V}_{\text{t, cyto}}^{\text{wa}} = \bar{V}_{\text{cyto}}^{\text{wa}} - \bar{V}_{\text{b, cyto}}^{\text{wa}}$.

[‡]Values of the volumetric elastic modulus ε were calculated from Eq. 7 using $\bar{V}_{\text{cell, 0}}^{\text{tot}} = 2.19 \pm 0.03 \mu\text{L}/\text{mg DW}$, values of $\bar{V}_{\text{cell}}^{\text{tot}}$ from Fig. 1, and the tabulated $\Delta\Pi$.

[§]Values of $\bar{V}_{\text{cyto}}^{\text{wa}}$ and $\bar{V}_{\text{b, cyto}}^{\text{wa}}$ ($\mu\text{L}/\text{mg DW}$) and $(\phi \sum n_j)_{\text{cyto}}$ ($\mu\text{mol}/\text{mg DW}$) for cells grown at 0.10 Osm and 0.28 Osm are from Cayley et al. (1991) except for the value of $\bar{V}_{\text{cyto}}^{\text{wa}}$ for cells grown at 0.1 Osm, which was obtained by combining data obtained in the present study with data reported in Cayley et al. (1991).