

Table 1
Volumes of cellular (\bar{V}_{cell}), cytoplasmic (\bar{V}_{cyto}) and periplasmic (\bar{V}_{peri}) water in E. coli as a function of the osmolarity of the growth medium

| [NaCl] of the growth medium (M) | Osmolarity of the growth medium (osm) ^a | Water (μ l/mg cell dry wt) | | |
|---------------------------------|--|---------------------------------|------------------|-------------------------------|
| | | \bar{V}_{cell} | \bar{V}_{cyto} | \bar{V}_{peri} ^b |
| 0 | 0.10 | 2.54 ± 0.05 | 2.23 ± 0.12 | 0.31 ± 0.13 |
| 0.1 | 0.28 | 2.45 ± 0.11 | 2.08 ± 0.06 | 0.37 ± 0.13 |
| 0.2 | 0.47 | — | 1.71 ± 0.10 | — |
| 0.3 | 0.65 | 2.06 ± 0.19 | 1.68 ± 0.15 | 0.38 ± 0.24 |
| 0.4 | 0.83 | 2.06 ± 0.07 | 1.47 ± 0.05 | 0.59 ± 0.09 |
| 0.5 | 1.02 | 1.87 ± 0.12 | 1.18 ± 0.06 | 0.69 ± 0.13 |
| 0.55 | 1.11 | — | 1.04 ± 0.08 | — |

Reported cellular and cytoplasmic volumes (μ l/mg cell dry wt) are the mean (± 1 s.d.) of measurements on 3 to 8 independent cultures, each analyzed in triplicate, except for the value of \bar{V}_{cell} measured in cells grown at 0.83 osm (1 triplicate determination). Cells were grown in MBM containing the indicated amount of NaCl.

^a Calculated from osmotic coefficients of NaCl (Robinson & Stokes, 1959) as described in Materials and Methods.

^b $\bar{V}_{peri} = \bar{V}_{cell} - \bar{V}_{cyto}$ (μ l/mg cell dry wt).