

TABLE V

*Effects of concentrated solutions on total and compartmental volumes of Salmonella typhimurium LT2*

Cells were grown in Medium 63 containing 0.2% D-glucose. After being harvested, washed, and suspended in Medium 63, aliquots of 0.50 ml of the resulting suspension (10 mg, dry weight, of cells) were mixed with 1.5-ml portions of Medium 63 or Medium 63 containing sodium polyglutamate, sucrose, or ethanol. After 15 min, [<sup>3</sup>H]water and inulin-[<sup>14</sup>C]carboxyl or [<sup>14</sup>C]sucrose were added. These labeled suspensions (plus unlabeled controls) were centrifuged to determine the distributions of the labeled solutes as described under "Measurement of Solute Distributions." The data so obtained were used in accord with the scheme in Fig. 1 to compute cell volumes. After centrifugation, the osmotic strength of each supernatant solution was determined with a Knauer freezing point depression osmometer. Total cell volumes are expressed relative to the total volume of cells in Medium 63.

Composition of extracellular fluid	Osmotic strength of extracellular fluid	$V_{\text{cell}}$	$\frac{V_{\text{peri}}}{V_{\text{cyto}}}$
	<i>mosM</i>		
Medium 63	145	1.00	0.27
Medium 63 + 10% sodium polyglutamate	428	0.63	0.33
Medium 63 + 1 M sucrose	1560	0.77	2.33
Medium 63 + 10% ethanol	>2000	1.03	0.39