

Table 1. Representative organisms using different osmolyte systems.

Group of organisms	Osmotic concentration (mmole/kg water)		Inorganic ions (mmole/kg water)		Amino acids	Organic osmolytes (mmole/kg water)			Urea	Polyols (molar)	Reference
	Cell	Environment	[Na ⁺]	[K ⁺]		Be-taine	TMAO	Sar-cosine			
Osmotic conformers											
Plants											
Unicellular algae											
		4.25M NaCl								4.4	(6)
		2.55M NaCl								2.4	(6)
Multicellular species											
		0.2M NaCl			350						(10)
		Fresh water			40						(10)
						*					(19)
Animals (muscle tissue)											
Invertebrates											
	1005	Seawater	45	169	503	82					(55)
	588	Fresh water	55	71	158	18	47				(51)
	1118	Seawater	144	146	341	14	75				(51)
	1246	Seawater	71	217	221	208					(56)
	1377	Seawater	31	189	483	108	86				(57)
Vertebrates											
		Seawater	96	140	291		87		2		(60)
		Seawater	30	90			290		422		(59)
		Seawater	18	130		100	180		333		(61)
		Seawater	7	201			255		604		(62)
		50% seawater	30	171			186		377		(62)
		Seawater	10	162	214		64	62	398		(62, 77)
		50% seawater	4	134	144		36	23	264		(62,77)
Eubacteria											
		1M NaCl			625						(63)
Archaeobacteria											
		3.4M NaCl	400-800	4500							(5)
		5.1M NaCl	400-800	7500							(5)
Osmotic regulator											
Animal: teleost fish											
		Fresh water	10	157	44		20				(58)
		Seawater	15	158	71		30				(58)

*Exact cytosol concentration not known due to contribution of vacuole to total cell volume.