

TABLE 14–1 Reference Table of Plasma Constituents

Constituent	Amount/Concentration	Major Functions
Water	93% of plasma weight	Medium for carrying all other constituents
Electrolytes (inorganic)	Total < 1% of plasma weight	Keep H ₂ O in extracellular compartment; act as buffers; function in membrane excitability and blood clotting
Na ⁺	145 mM	
K ⁺	4 mM	
Ca ²⁺	2.5 mM	
Mg ²⁺	1.5 mM	
H ⁺	0.0004 mM	
Cl ⁻	103 mM	
HCO ₃ ⁻	24 mM	
Phosphate (mostly HPO ₄ ²⁻)	1 mM	
SO ₄ ²⁻	0.5 mM	
Proteins	Total = 7% of plasma weight, 7.3 g/100 ml (2.5 mM)	Provide nonpenetrating solutes of plasma; act as buffers; bind and transport other plasma constituents (lipids, hormones, vitamins, metals, etc.); clotting factors; enzymes, enzyme precursors; antibodies (immune globulins); hormones
Albumins	4.2 g/100 ml	Blood clotting
Globulins	2.8 g/100 ml	
Fibrinogen	0.3 g/100 ml	
Gases		
CO ₂	2 ml/100 ml (1 mM)	A waste product
O ₂	0.2 ml/100 ml (0.1 mM)	Oxidative metabolism
N ₂	0.9 ml/100 ml (0.5 mM)	No function
Nutrients		(See Chapters 2, 4, and 18)
Glucose and other carbohydrates	100 mg/100 ml (5.6 mM)	
Total amino acids	40 mg/100 ml (2 mM)	
Total lipids	500 mg/100 ml (7.5 mM)	
Cholesterol	150–250 mg/100 ml (4–7 mM)	
Individual vitamins	0.0001–2.5 mg/100 ml (0.00005–0.1 mM)	
Individual trace elements	0.001–0.3 mg/100 ml (0.0001–0.01 mM)	
Waste products		
Urea (from protein)	34 mg/100 ml (5.7 mM)	
Creatinine (from creatine)	1 mg/100 ml (0.09 mM)	
Uric acid (from nucleic acids)	5 mg/100 ml (0.3 mM)	
Bilirubin (from heme)	0.2–1.2 mg/100 ml (0.003– 0.018 mM)	
Individual hormones	0.000001–0.05 mg/100 ml (10 ⁻⁹ –10 ⁻⁶ mM)	Messengers in control systems