

ELECTROLYTES



Electrolytes are substances that have a natural positive or negative charge when dissolved into water. They are the most abundant solutes in body fluids. E.g.: inorganic salts, all acids and bases, and some proteins.

What do electrolytes do in the body?

Electrolytes help regulate chemical and physical reactions in the body and maintain balance between fluids inside and outside of cells. They are vital in regulating body pH levels, nerve and muscle function. Electrolytes help move nutrients in and move waste out of cells.

Electrolyte	Normal range	Function	↑ ↑ Hyper ↑ ↑	↓ ↓ Hypo ↓ ↓
Sodium Na⁺	135–145 mEq/L	Maintains fluid balance, needed for muscle contraction, helps with nerve signaling	High HR, high BP, thirst, oliguria, restlessness, anxiety, edema	High HR, thready pulse, low BP, nausea/vomiting, restlessness, HA, weakness, seizure
Potassium K⁺	3.5–5.5 mEq/L	Maintains blood pressure levels, regulates heart contractions, helps with muscle function	ECG changes, ABD cramps, oliguria, muscle cramps, weakness	ECG changes, low BP, arrhythmias, nausea/vomiting, decreased peristalsis, polyuria, dizziness, weakness, decreased reflexes
Magnesium Mg⁺	1.5–2.5 mEq/L	Needed for muscle and nerve function, proper heart rhythm, promotes bone and teeth growth	Low BP, low HR, weak pulse, dyspnea, low RR, decreased LOC, confusion, muscle weakness, decreased reflexes	Arrhythmias, high HR, high BP, seizures, delusions, hallucinations, tetany, Chvostek sign + Trousseau's
Calcium Ca⁺	4.5–5.2 mEq/L	Helps with muscle contraction, nerve signaling, blood clotting, forming and maintaining bones and teeth	Arrhythmias, polyuria, kidney stones, bone pain, weakness	Arrhythmias, low HR, low BP, weak pulse, paresthesia, muscle spasms, seizures, Chvostek sign + Trousseau's, dyspnea, laryngospasm
Chloride Cl⁻	95–105 mEq/L	Helps maintain fluid balance, helps maintain proper blood pH, needed to make stomach acid	Irregular HR, high BP, fluid retention, excessive thirst, confusion, personality changes, seizures, fatigue, muscle weakness, spasms, numbness or tingling	Irregular HR, low BP, fluid loss, diarrhea or vomiting, weakness, fatigue, confusion, muscle cramps, difficulty breathing
Phosphate PO⁴⁻	2.5–4.8 mg/dL	Develops healthy teeth and bones, aids nerve and muscle function	Arrhythmias, muscle spasms, numbness and tingling around mouth or extremities, seizures, bone and joint pain, itchy skin, rash	Confusion, muscle weakness, fatigue, bone and muscle pain, seizures, numbness, confusion, irritability
Bicarbonate HCO³⁻	22–30 mEq/L	Maintains acid-base balance	Confusion, hand tremor, lightheadedness, muscle twitching, nausea/vomiting, numbness or tingling in face or extremities, tetany	High HR, confusion, dizziness, fatigue, loss of appetite, vomiting HA, rapid breathing or long deep breaths, weakness

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