HEALTH BASICS

Electrolytes

Electrolytes are charged minerals that help control body fluids, nerves, muscles, and heart rhythm.

WHAT IT IS
Minerals carrying electrical charge in body fluids

WHERE IT COMES UP
Blood tests, fluid loss, medicines, supplements, and food labels

WHY IT MATTERS
Supports fluid balance, nerves, muscles, and heart rhythm

WHAT IT IS NOT
Not a disease or diagnosis

WHO TO ASK
Primary care clinician, pharmacist, or relevant specialist

HOW IT IS CHECKED
Blood tests; urine tests in selected cases

Overview

Electrolytes are minerals that carry an electrical charge when dissolved in body fluids. Your blood, urine, and the fluid inside and around your cells all contain electrolytes.

The main electrolytes include sodium, potassium, chloride, bicarbonate, calcium, magnesium, and phosphate. Each has several roles. Together, they help control how water moves through your body and how nerves and muscles work.

Electrolytes are not a disease or a diagnosis. You may see them listed on blood test results, food labels, supplements, or sports drinks. A clinician may also discuss them after vomiting, diarrhea, dehydration, kidney problems, or a change in medication.

An "electrolyte panel" usually measures sodium, potassium, chloride, and bicarbonate. Bicarbonate may appear on the report as total carbon dioxide, or CO2. Calcium, magnesium, and phosphate often require separate tests. A basic or comprehensive metabolic panel may include some electrolytes along with measures of kidney function and blood glucose.

How it works

Water moves between body compartments partly according to the concentration of electrolytes. Sodium is especially important for controlling the amount of water outside cells. If sodium and water become seriously out of balance, cells can swell or shrink.

Potassium is concentrated mainly inside cells. It helps nerves send electrical signals and supports muscle contraction, including the heart's electrical activity. Calcium and magnesium also contribute to muscle and nerve function. Calcium has additional roles in bones and blood clotting.

Chloride often moves with sodium and helps maintain fluid and acid balance. Bicarbonate helps keep the blood from becoming too acidic or too alkaline. Phosphate supports bones, cell membranes, and the processes cells use to store and release energy.

Your kidneys do much of the day-to-day control. They filter the blood and adjust how much water and each electrolyte leave in urine. Hormones help direct these changes. Your lungs also influence acid balance by controlling how much carbon dioxide you breathe out.

Food and drinks replace electrolytes that leave through urine, stool, and sweat. For most people eating a mixed diet, this happens without any need to calculate each electrolyte. Needs may change with heavy sweating, prolonged fluid loss, certain health conditions, or medicines that affect the kidneys.

Why it matters for your health

Electrolytes must stay within controlled ranges for cells and organs to work properly. More is not always better. Both low and high levels can matter.

A blood result is interpreted in context. The clinician may consider:

Reference ranges can differ slightly between laboratories. A value just outside the printed range does not by itself establish a diagnosis. Some unexpected results are rechecked because sample handling can change them. Potassium, for example, may appear falsely high if blood cells were damaged while the sample was collected or processed.

Food labels most often bring attention to sodium and potassium. Sodium is not identical to salt: table salt contains sodium and chloride. Label information can help you compare products, but it does not show whether your blood electrolyte levels are normal.

- Which electrolyte is outside the laboratory's reference range
- How far the result is from that range
- Whether the change is new, stable, or getting worse

- Kidney function, fluid intake, and recent fluid loss
- Medicines, supplements, and other health conditions
- Whether the blood sample may have affected the result

What can go wrong

An electrolyte imbalance means that one or more levels are too low or too high. These situations have specific names. Examples include hyponatremia or hypernatremia for low or high sodium, and hypokalemia or hyperkalemia for low or high potassium.

Electrolyte problems can relate to vomiting, diarrhea, heavy sweating, burns, dehydration, or drinking far more water than the kidneys can remove. Kidney disease can reduce the body's ability to control potassium, sodium, phosphate, and other minerals.

Heart failure and advanced liver disease can change how the body holds sodium and water. Hormone disorders involving the adrenal, thyroid, or parathyroid glands may affect particular electrolytes. Poorly controlled diabetes can also disturb fluid and electrolyte balance.

Some medicines can change electrolyte levels. Examples include water tablets like furosemide or hydrochlorothiazide , also called diuretics; certain blood pressure medicines; laxatives; steroids like prednisone or hydrocortisone ; and some antacids. Supplements and salt substitutes can also matter, especially when kidney function is reduced. Do not stop a prescribed medicine because of a possible electrolyte effect without getting medical advice.

The effects of an imbalance depend on which electrolyte is involved and how quickly the level changed. Severe abnormalities may interfere with the brain, muscles, or heart rhythm.

Arrange routine follow-up for an unexpected result if you otherwise feel well. Ask when it should be repeated and whether any medicines, supplements, or recent illness could explain it.

Seek prompt medical advice for ongoing vomiting or diarrhea, difficulty keeping fluids down, worsening weakness, new palpitations, or an abnormal result that the testing service has marked as needing urgent review.

Call emergency services for a seizure, loss of consciousness, severe confusion, difficulty breathing, or a new sustained rapid or irregular heartbeat. These signs have many possible causes and need urgent assessment rather than home electrolyte treatment.

What you can do

If an electrolyte result is abnormal, ask which electrolyte is affected and whether the result

needs confirmation. It can also help to ask how your kidney function, medicines, and recent food or fluid intake influence the interpretation.

Keep an up-to-date list of prescription medicines, non-prescription products, supplements, and salt substitutes. Bring it to appointments or make it available when discussing test results. Record recent vomiting, diarrhea, heavy sweating, changes in thirst, or major changes in fluid intake.

Do not try to correct a blood result with large amounts of water, salt, sports drinks, or supplements unless a clinician has given you a specific plan. The right response to a low or high result is not the same for every electrolyte. Potassium and magnesium supplements, in particular, can be harmful when taken unnecessarily or when the kidneys cannot remove the excess.

Blood testing is the main way to check electrolytes. A repeat blood sample may be all that is needed after a mildly unexpected result. Urine testing can sometimes help show whether the kidneys are losing or retaining an electrolyte, but it is not required in every case.

If your results are normal and you do not have a condition or treatment that requires monitoring, there may be nothing special you need to do.

Common questions

Are electrolytes the same as salt?

No. Table salt contains the electrolytes sodium and chloride, but the term "electrolytes" also includes potassium, bicarbonate, calcium, magnesium, and phosphate.

Do I need an electrolyte drink after exercise?

Not always. Water and regular meals are often enough after ordinary activity. Electrolyte drinks may be useful in some situations involving prolonged exercise, heavy sweating, or significant fluid loss. Their sugar, sodium, and potassium content differs, so check the label.

Can drinking too much water lower electrolytes?

Yes. Drinking water much faster than the kidneys can remove it can dilute blood sodium. This is more likely during prolonged activity or when a health condition or medicine limits water removal.

Can I tell whether my electrolytes are normal from how I feel?

No. Mild abnormalities may not cause noticeable changes, and possible effects such as weakness or nausea are not specific. A blood test is needed to measure the levels.

Does fasting affect an electrolyte test?

An electrolyte panel often does not require fasting. However, it may be ordered with tests that do. Follow the instructions from the laboratory or testing service.

What is an anion gap?

The anion gap is a calculation made from several electrolyte results. It helps clinicians assess the balance of charged particles in the blood and may provide clues about acid buildup. It is not a separate electrolyte or a diagnosis on its own.

Sources

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