Chloride

The main anion of the extracellular fluid, it is less abundant in the intracellular fluid.


Sodium chloride

Together with sodium, it contributes to the osmotic pressure of the extracellular fluid, which is of great importance for maintaining the acid-base balance (when Cl^- is lost, it is replaced by bicarbonates, when Cl^- is retained, bicarbonates decrease). HCl is a much stronger acid than H_2CO_3, therefore metabolic alkalosis occurs when Cl^- is lost, metabolic acidosis occurs when Cl^- is retained, acidic gastric juice is formed from Cl^-, eutrophil granulocytes form hypochloric acid from Cl^- and hydrogen peroxide (myeloperoxidase), which eliminates phagocytosed microorganisms. We receive chloride ions from food in the form of NaCl. Thus, they are taken in equimolar amounts with Na^+, as they are excreted together with Na^+ (they are absorbed together with Na^+ in the kidneys).

Reference limits

- extracellulary: 97–108 mmol/l;
- intracellulary: 3–10 mmol/l.

Pathological values

Hyperchloridemia

Causes: kidney failure (reduced excretion by the kidneys), thereby retaining other strong acid anions (sulfates, phosphates), thus developing renal metabolic acidosis, in tubular acidosis and during treatment with a carbonic anhydrase inhibitor (acetazolamide), reabsorption of bicarbonates is impaired, instead of them therefore, together with Na^+, Cl^- is absorbed, severe hyperchloremic metabolic acidosis can occur with uretero-sigmoideostomy, when Cl^- is increasingly absorbed from the urine in the intestine, during repeated infusions of NaCl more Cl^- also enters the body, because the normal concentration of Cl^- in the extracellular fluid is 37 mmol/l lower than the concentration of Na^+ (in NaCl solution, the concentrations of Na^+ and Cl^- are the same).

Clinical picture

Treatment

Hypochloridemia

Causes: vomiting, aspiration of gastric juice, treatment with diuretics (furosemide), adrenal insufficiency, severe catabolism (Cl- is lost in the urine along with K+ released from the cells), excessive sweating.

Clinical pictue

Treatment

Links

Related articles

- Chlorine imbalance

Source

- SCHNEIDERKA, Petr. *Kapitoly z klinické biochemie.* 2. edition. Karolinum, 2004. ISBN 80-246-0678-X.