

Water and electrolyte absorption

Average person takes in about 2 liters of water a day. In addition, about 7 liters a day are excreted into the gastrointestinal tract through saliva, gastric juice, pancreatic juice, bile and intestinal juice. Only 100-200 ml of water is excreted in the stool and almost **98% of this liquid must be absorbed**.

Water moves across the wall of the gastrointestinal tract by passive processes in both directions. Absorption takes place mainly in the jejunum and ileum. The movement of water through the intestinal tract is conditional **osmotic**. The small intestine is relatively permeable to water and the absorbed fluid is isotonic. *Colon is less permeable and the absorbed fluid is hypertonic. Absorption disorders can affect absorption efficiency. The presence of non-absorbable, osmotically active substances increases the rate of passage of intestinal contents, and absorption processes do not have enough time. These substances act as a laxative, resulting in liquid stools. The efficiency of water absorption also decreases with increased blood pressure in the portal circulation.* **Na⁺ ions** are absorbed along the entire length of the intestines. On the luminal side, ions enter in three ways, always with the participation of

Na⁺/K⁺-ATPases

1. Cotransport of Na⁺ on a carrier with other substances (AK, glucose).
2. By diffusion of Na⁺ ions based on an electrochemical gradient. Mainly in the large intestine.
3. By parallel transport of Na⁺ and Cl⁻. In the ileum, Na⁺ is exchanged for H⁺ and at the same time Cl⁻ is exchanged for HCO₃⁻. H⁺ and HCO₃⁻ combine to form water and CO₂, which diffuses into the cells. HCO₃⁻ ions come from bile and pancreatic juice.

The stool is poor in Na⁺, Cl⁻ ions and water, but approximately 1/3 of the ingested Ca²⁺ is excreted in it.

Links

References

- KITTNAR, Otomar. *Medical Physiology*. 1. edition. Grada, 2011. ISBN 978-80-247-3068-4.
- SILBERNAGL, Stefan - DESPOPOULOS, Agamemnon. *Atlas of Human Physiology*. 6. edition. Grada, 2011. ISBN 978-80-247-0630-6.^{Superscript text}