

Water in organism

Water in organism is divided into:

- **Free water** – used to dissolve substances.
- **Hydration water** - bounded to hydrophilic colloids.

Molecules of free and hydration water are constantly exchanged and in balance.

- **Oxidising water** – is formed during the burning of fats, proteins,...

A person can go without water for 6-8 days, then he **loses more than 11%** of water from muscle or fat tissue and die.

Water metabolism

Water metabolism in the body is very closely linked to Na^+ metabolism . The ability of the organism to store water and divide it into the appropriate compartments is determined by the amount of particles dissolved in it, i.e. the so-called osmolality.

Tab.: Distribution of water in individual spaces.

Space	H_2O (in liters)	H_2O (% of body mass)	H_2O (% of total water)
ICT	28	40	65
ECT	14	20	35
* IST	11	15	25
* plasma	3	5	10
in total	42	60	100

- Children have the content of water in the body higher (70–80%), and the proportion of ICT and ECT is also different (newborn has the volume of ECT even higher than ICT).
- Failure in water metabolism are failures in osmoregulation. Normal plasma osmolality ranges from 275 to 295 mmol/kg. When it rises above the value of 278 mmol/kg, the secretion of antidiuretic hormone (ADH) begins. A further gradual increase in ADH secretion occurs as plasma osmolality increases – the maximum is reached at a value of 298 mmol/l. A further pathological increase in osmolality no longer leads to a further increase in ADH secretion. Another stimulus for ADH secretion is a 10-20% drop in circulating volume or a 5% drop in blood pressure. Anxiety, pain, some drugs (opiates, barbiturates, also chlorpropamide, acetaminophen) can have a similar effect.

Links

Related articles

- Dehydration
- Physical and chemical properties of water
- Water metabolism disorders
- Perspiratio insensibilis

Source

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- MASOPUST, Jaroslav – PRŮŠA, Richard. *Patobiochemie metabolických drah*. 2. edition. Charles University, 2004. 208 pp. pp. 170–171.