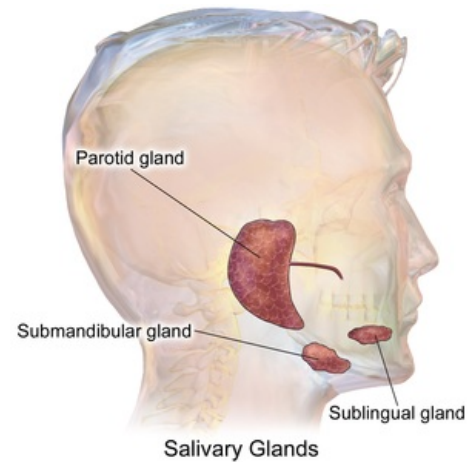


Saliva

Saliva is a clear liquid produced by the salivary glands of the oral cavity. It contains water, enzymes, mucus and minerals. After mixing with other fluids of the oral cavity and with cellular elements, it becomes a cloudy liquid, the so-called *mixed saliva*.

Function

- Saliva helps to **mechanically** remove food residues (*oral clearance*) and has significant **antibacterial properties** resulting from specific and non-specific immune factors. It contains antimicrobial proteins such as lysozyme, lactoferrin, peroxidase enzymes, agglutinins (mucin, fibronectin, secretory IgA, etc.) etc.
- Furthermore, it is a reservoir of calcium and phosphate minerals needed for **remineralization** processes in the enamel, it mediates selective adhesion and colonization of bacteria and contains buffer systems (bicarbonate, phosphate and protein) that stabilize pH fluctuations in the mouth - this **buffer system** protects dental tissue from acidic metabolites of oral bacteria. The fact that the content of the bicarbonate buffer system increases in stimulated saliva is significant, which means that saliva stimulated by e.g. chewing gum is more effective in neutralizing acids than resting saliva.
- Saliva plays a very important role in relation to food. It starts **digestion**, thanks to enzymes (amylases, lyases, proteases) and the creation of a **mouthful**, generally it moistens the food and lubricates the oral cavity.



Insufficient secretion of saliva

The **physiological decrease** in salivary secretion is age-related and it is associated with the involution of the salivary glands. A **pathological decrease** in salivary secretion is accompanied by certain diseases, stress, psychological problems and the use of certain drugs (spasmolytics, diuretics, antidepressants, antihypertensives, etc.), the result of radiotherapy in the head and neck area. There are many consequences of lack of saliva:

- increased incidence of tooth decay,
- atrophy of mucous membranes,
- increased susceptibility to infections in the oral cavity,
- difficulty swallowing,
- impaired perception of taste.

Prevention of reduced saliva secretion first of all consists of ensuring a sufficient fluid intake. Currently, there are products available on the market (in the form of mouthwashes, toothpastes, gels, sprays and chewing lozenges) that substitute the basic functions of saliva.

Composition

The saliva itself, which is produced by the salivary glands, is immediately after being expelled by the salivary papillae, mixed with other substances contained in the oral cavity. Saliva consists of 99% water, other components of *mixed saliva* include:

- The product of the salivary glands itself (electrolytes, salivary proteins, etc.),
- Blood components that may appear as a result of bleeding into the oral cavity, then as a transudate of blood plasma - gingival sulcal fluid,
- other fluids such as nasopharyngeal secretions and sulcular fluid,
- microorganisms (viruses, oral bacteria, fungi) and their products
- epithelium,
- exogenous substances, such as food residues or toothpaste

Regarding the composition of saliva very important is the concentration of **Ca²⁺** and **phosphates** and the so-called *remineralization potential of saliva*. The possibilities of influencing this natural remineralization potential are currently the subject of intensive research. Other electrolytes contained in saliva are Na⁺, K⁺, F⁻ ions and other molecules that, among other things, also have a buffering effect. Fluoride ions are very important for preventing tooth decay. The presence of fluoride in saliva catalyzes the transformation of Ca₃(PO₄)₂ to *hydroxyapatite*, Ca₁₀(OH)₂(PO₄)₆, during remineralization and it causes increased deposition of *fluorapatite*, Ca₅(PO₄)₃F, which is less soluble than hydroxyapatite, thus making the tooth more resistant demineralization.

Ion content in saliva:

	IOSOTONIC SALIVA	HYPOTONIC SALIVA
Na ⁺	145 mmol/l	2 mmol/l
K ⁺	4 mmol/l	25 mmol/l
Cl ⁻	100 mmol/l	15 mmol/l

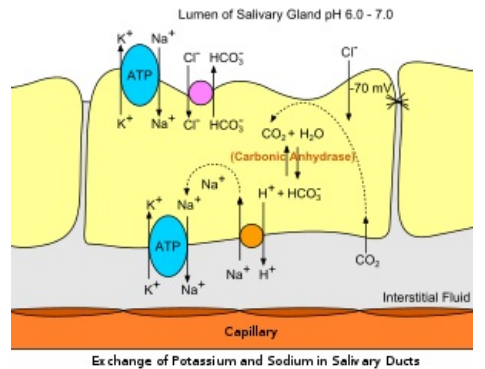
Saliva secretion

Saliva secretion is 90% ensured by three large salivary glands, the rest is made up of a number of small salivary glands scattered in the mucous membrane of the oral cavity. If the secretion of the salivary glands is stimulated, the volume of produced saliva is around 4 ml/min, with unstimulated secretion, the amount of saliva produced is between 0.3 and 1.0 ml/min. 0.5 - 1.5 liters of saliva are produced daily, which corresponds to 20% of the total volume of plasma.

Production of saliva in the salivary glands

First of all, primary saliva is produced which is an isotonic fluid produced by acinar cells. In the second step, hypotonic saliva is already formed. This modification takes place in the ducts of the salivary glands. Under normal conditions, hypotonic saliva is produced, but with increased secretion, when there is insufficient adjustment of saliva in the ducts, saliva is isotonic

1. Potassium ions move into the interstitium, chloride anions move into the acinar lumen, creating a negative potential in the lumen. Paracellularly, sodium cations also move into the lumen, thanks to which electroneutrality is established, as well as increased osmolarity in the lumen. Water begins to enter the lumen.
2. Primary isotonic saliva is subject to treatment in the outlets. Sodium and chloride ions are reabsorbed into the interstitium. Potassium ions and bicarbonates are actively transported into the lumen. Due to the fact that the cells of the ducts are limitedly permeable to water, its reabsorption does not occur, which means that the osmolarity in the lumen decreases. This creates hypotonic saliva.



Control of salivary secretion

Saliva secretion is controlled by the autonomic nervous system, with the parasympathetic effect being more pronounced.

Links

External links

- Slina (česká wikipedie)
- Saliva (anglická wikipedie)

Source

Related articles

- salivary glands
- Salivary gland diseases
- Proteins in saliva

Literature

This article is a stub.
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