



Biochemical analysis of saliva

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- **saliva** is a critical component of the oral environment, a dilute aqueous solution containing both **inorganic** and **organic** constituents.

- **Saliva** plays an essential role during mastication, in swallowing and in speech. The substances dissolved in saliva during mastication are transported to stimulate taste receptors for taste perception.

- The functions of saliva are to protect the oral tissues by keeping them moist and by providing a lubricating mucoid secretion, by maintaining a fluid environment with high calcium and phosphate concentrations and the power of buffering acids and to initiate the digestion of starch. Impaired salivary secretion (hyposalivation) increases the risk of oral diseases such as dental caries and oral candidal infection

• Organic constituents

	Resting		Stimulating	
	Mean	Range	Mean	Range
• Proteins	220	140–640	280	170–420
• Amino acids	4			
• Amylase	38			
• Lysozyme	22		11	0.4–62
• IgA	19			
• IgG	1.4			
• Glucose	0.2			
• Citrate	1.0		1.0	0.5–3

	Resting		Stimulating	
	Mean	Range	Mean	Range
• Lactate			Trace	
• Ammonia		3	1-12	
• Urea	20	12-70	13	0.6-30
• Uric acid	1.5	0.5-3	3	1-21
• Creatinine	0.1	0.05-0.2		
• Cholesterol	8	2.5-50		
• CAMP	7		50	

Resting

Stimulating

Mean

Range

Mean

Range

Inorganic constituents

• Sodium	15	0–20	60
• Potassium	80	60–100	80
• Thiocyanate-smoker	9	6–12	
• Non-smokers	2	1–3	
• Calcium	5.8	2.2–11.3	6
• Phosphate (P)	16.8	6.1–71	12
• Chloride	50		100
• Fluoride (ppm)	0.028	0.015–0.045	

- Saliva contains a wide range of protein, DNA and RNA biomarkers, which assist in the diagnosis of multiple diseases and conditions, including cancer, cardiovascular diseases (CVD), auto-immune and degenerative diseases, respiratory infections, oral diseases, and microbial (viral, bacterial and fungal) diseases

- The recent advent of highly sensitive technologies, such as next-generation sequencing, mass spectrometry, highly sensitive ELISAs, and homogeneous immunoassays, suggests that even small quantities of salivary biomarkers are able to be assayed accurately, providing opportunities for the development of many future diagnostic applications (including emerging technologies, such as point-of-care and rapid molecular technologies).

- Salivary peptide hormones, such as epidermal growth factor (EGF) and transforming growth factor-alpha (TGF-alpha), and amines such as melatonin, are involved in the regulation of inflammatory processes and in the promotion of cell proliferation.

• **Gastrointestinal (GI) hormones**

- 1. Insulin

- 2. Glucagon

- 3. GLP-1 :The gut hormone GLP-1 is produced in intestinal L cells

- 4. GIP: is produced by K cells in the gut. The main function of GIP is to inhibit GI motility and the secretion of gastric acid.

- 5. CCK: The hormone CCK is produced by L-cells in the small intestine and its secretion in the duodenum induces the release of enzymes from the pancreas and bile from the gallbladder.

- Ghrelin,

- Obestatin

Adipokines

1. Leptin
2. Adiponectin

Neuropeptides

1. Galanin
2. Nesfatin-1

Thank you
for attention