

History of saliva

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Abstract

Saliva is a complex secretion directly affecting oral and systemic health through its physical, chemical, and biological properties. Saliva is a mirror of the body.

Keywords:

xerostomia, oral health, chewing, taste perception, speech, secretion, salivary gland, saliva

Saliva is continuously produced by the three main salivary glands at a rate of 1.5 l per day. It is an essential fluid for the functioning of our body. It contributes to maintaining the health of the oral cavity; it plays a significant role in keeping the teeth clean and intact, in the perception of taste, in the processing of food, in swallowing, in digestion, and in speech. Its main component is water, but it also contains minerals, proteins, metabolic products, electrolytes, enzymes, and other compounds. Saliva is a mirror of the body.

The ability to use saliva to monitor an individual's health and disease state is critical in health promotion and health research resulting from the last decades (saliva tests). The Greeks knew this since saliva was one of the essential bodily fluids. If they were in balance, it was a state of *eucrasia*; if the balance was overturned, *dyscrasia* occurred.

The discovery of the major salivary glands is primarily the story of the recognition of the major excretory ducts of the glands. During the Renaissance, various prominent scientists determined the anatomy and physiology of salivary glands. The first dedicated book to salivary glands was written by Thomas Wharton (1614-1673) in his landmark book *Adenographia sive glandularum totius corporis descriptio* (Adenographia, or description of the glands of the whole body) (1656). The work details the submandibular gland duct (1). The Danish author later became a Catholic bishop. Niel Steensen (Nicolai Stenonis) (1638-1686), an anatomist, studied the lymphatic system and identified the opening of the parotid gland duct in sheep, dogs, and rabbits, that bears his name, the Stensen duct (ductus stenonianus). His work entitled, *De*

glandulis oris et novis earundum vasis (On the glands of the mouth and their new ducts) (1661) (2) described the anatomy of the submandibular and sublingual glands.

Caspar Bartholin Secundus (1655-1738) defined the anatomy and role of the sublingual salivary duct that bears his name in *De ductu salivali, hactenus non descripto observatio anatomica* (1685). Bartholin explained how the sublingual gland secreted water, electrolytes, mucus, and enzymes from the acini into the collecting ducts. Within the ducts, the composition of the secretion changed. Small collecting ducts within the salivary glands lead to larger ducts, eventually forming a single large duct that flows into the oral cavity.

The physiological and biochemical analysis of salivary properties can be traced to the second half of the 19th century. In 1898, Chittenden and Mendel (3) studied the effects of alcoholic beverages on salivary composition. After digestion and secretion, they measured organic components, salts, and chlorine in saliva. At the end of the 19th century, Pavlov's experiments on dogs became famous; the secretion of saliva under the influence of a conditioned reflex. Others have studied the digestive power of saliva, mainly through amylase (4) and proteases. Studies conducted at the beginning of the 20th century demonstrated the involvement of saliva in nutrition (5). Salivary diagnostics was first described in 1900 (6) and developed after 1960 when appreciated that it was a potential diagnostic system that reflects the entire spectrum of normal and disease states of the body (7). Very sensitive and high throughput systems, i.e., mass spectrometry, RT-PCR, microarray, and nanoscale sensors, can measure proteins and nucleic acids with minimal samples.

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1. Fig. Saliva-test