

Anion Exchanger Immunoreactivity in Human Salivary Glands in Health and Sjögren's Syndrome

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Salivary gland ducts play a relevant role in saliva secretion through transport processes. Na⁺-independent chloride-bicarbonate anion exchangers (AE) may be involved in these processes by generating ion fluxes into the salivary secretion. In Sjögren's syndrome, a disorder with gland dysfunction, there might be an impaired expression of AE proteins. Here we study AE immunoreactivities in human salivary glands, both in health and in Sjögren's syndrome. Immunohistochemistry was carried out on salivary glands from normal subjects and patients with Sjögren's syndrome, using two monoclonal antibodies against AE1 and AE2. Normal salivary glands showed AE2 immunoreactivity, which was restricted to the epithelium of the ducts, with no staining at the acini. A strong positivity was seen in the basolateral portion of the striated ducts, while interlobular duct cells showed a discrete positivity at their apical pole. In salivary glands from most of the patients with Sjögren's syndrome, AE2 immunoreactivity was absent in the ducts as well as in the acini. In both normal and diseased salivary glands, AE1 immunoreactivity was only located at the erythrocyte membrane. The recently reported AE0 was discarded because no AE0 message was found in salivary glands by reverse transcription polymerase chain reaction. In conclusion, AE2 immunoreactivity is observed in the ducts of normal salivary glands, particularly in the striated ducts. AE2 immunoreactivity is virtually absent in salivary glands from pa-

tients with Sjögren's syndrome, which may reflect either a loss of AE2 after inflammatory atrophy, or a primary defect occurring in the disease. (Am J Pathol 1995, 146:1422-1432)

Salivary glands are composed of mucous and serous units, consisting of acini and ducts. The duct system has several differently structured segments. Attached to the acinus in the major salivary gland (Figure 1) is the intercalated duct, which varies in length from one salivary gland to another, and is particularly long in the parotid gland. Intercalated ducts have a small diameter and consist of small cuboidal cells. They are followed by the striated ducts, also called secretory ducts, which usually are long and consist of tall columnar cells. The basal compartment represents deep interdigitating cytoplasmic processes of adjacent cells similar to those of the distal tubule of the nephron. The cytoplasmic processes bear long mitochondria, oriented perpendicularly to the base of the cells. This structural organization is characteristic of epithelia involved in rapid transport of ions and water. Striated ducts are followed by nonstriated interlobular or excretory ducts, which run through the connective tissue septa. In the minor (labial and buccal) glands, the structure is similar to that of the major glands, although in the minor glands the secretory pieces often continue with the striated ducts, and therefore they almost lack intercalated ducts.

The ducts play a significant role in salivary secretion. The primary secretion elaborated by the acini is further modified in the ducts, predominantly through ion transports mediated by membrane proteins.^{1,2}

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