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Immunolocalization of AQP5 in human parotid salivary glands

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Background. Aquaporins (AQPs) are channel protein essential in the transport of water across the biological cell membranes. Thirteen different AQPs have been identified in different tissues of mammals. In rat parotid, the AQP-5 is principally localized in the luminal membrane of the acinar serous cells (1). In mouse parotid a weak but distinct labeling has also observed in lateral, facing the neighboring cells, and basal plasma membranes (2). The AQP seems to be directly involved in transepithelial pathway for osmotic water flow, and in salivary fluid secretion. To date, in human only a report (3) testifies the presence of AQP-5 in luminal surface of secretory cells of parotid glands. So, in order to extend the knowledge regard to aquaporins, our intention was to define the sublocalization of AQP-5 in human parotid glands by immunogold post embedding method.

Methods. Surgical samples of human parotid glands were cut into small fragments, fixed in a mixture of paraformaldehyde and glutaraldehyde and embedded in Epon resin without previous osmication. Ultrathin sections were incubated overnight at 4°C with primary antibody (1:25) against human AQP-5. Labeled sections were examined by transmission electron microscope (TEM).

Results. The AQP-5 labeled was observed to the apical membrane of the serous cells. Gold particles were, occasionaly, found in the surface of intercellular canaliculi. Few small vesicles exhibited reactivity for AQP-5.

Conclusions. Our preliminary studies show that the apical membrane of serous cells of human parotid glands is a specific site of AQP-5. Because the water-rich fluid is secreted in the luminal membrane where aqp5 was present, it is reasonable to speculate that aqp5 plays an important role in the secretion in the human parotid salivary gland. The reactivity of labeled vesicles could mean that in serous cells of human parotid gland occurs a translocation of aqp5 from the intracytoplasmatic compartment to the apical membrane (4).

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