

On Minor Salivary Gland Secretion

AKADEMISK AVHANDLING

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av
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Avhandlingen är av sammanläggningstyp och baseras på följande fem delarbeten:

- I Eliasson L, Birkhed D, Heyden G, Strömberg N. Studies on human minor salivary gland secretions using the Periotron[®] method. Arch Oral Biol 1996;41:1179-1182.
- II Eliasson L, Carlén A, Laine M, Birkhed D. Minor gland and whole saliva in postmenopausal women using a low potency oestrogen (oestriol). Arch Oral Biol 2003;48:511-517.
- III Eliasson L, Almståhl A, Lingström P, Wikström M, Carlén A. Minor gland saliva flow rate and proteins in subjects with hyposalivation due to Sjögren's syndrome and radiation therapy. Arch Oral Biol 2005;50:293-299.
- IV Eliasson L, Carlén A, Almståhl A, Wikström M, Lingström P. Dental plaque pH and microorganisms during hyposalivation. J Dent Res 2006;85:334-338.
- V Eliasson L, Birkhed D, Österberg T, Carlén A. Minor salivary gland secretion rates and IgA in adults and elderly. Eur J Oral Sci 2006; accepted for publication.

ABSTRACT

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The overall aim of this series of studies has been to examine palatal, buccal and labial minor salivary gland secretions in relation to age and gender and other factors and conditions that could have effects on the saliva. Further aims were to analyze minor salivary gland secretions in relation to feelings of oral dryness and dental plaque pH. The studies are based on the Periotron method, which measures minor fluid volumes collected in absorbent filter papers. The concentrations of proteins in the saliva samples, recovered from the filter papers, were also examined using ELISA techniques. The accuracy and variability of the Periotron measurements were evaluated (Paper I). Mucosal gland secretion rates were analyzed in relation to age and gender, common diseases and medications (Papers I and V), during oestrogen treatment (Paper II) and hyposalivation due to Sjögren's syndrome or head and neck radiation (Paper III). The secretion rates were also related to denture wearing (Papers I and V), pregnancy (Paper V) and tobacco use (Papers I and V). The salivary concentration of IgA was examined in relation to various factors in Paper V, while albumin and lactoferrin were examined together with IgA in relation to hyposalivation (Paper III). Acidogenic microorganisms and pH in dental plaque after a sugar challenge were determined in hyposalivation subjects and matched controls (Paper IV). The results showed high accuracy for the Periotron measurements but large inter- and intra-individual variations in minor gland secretions. The secretion rate per mucosal surface area was highest at buccal sites and lowest at palatal sites. In the palatal mucosa, the secretion rate was higher at medial sites than at lateral sites. Age was not correlated to the minor gland secretion rates but was positively correlated to the IgA concentration. Women displayed lower minor gland flow rates and lower buccal saliva IgA concentrations than men. The buccal mucosal secretion rate was reduced during the use of diuretics and anti-hypertensive medication, while elderly women had an increased labial salivary secretion rate during oestrogen treatment. Subjective feelings of oral dryness were reduced with increased labial salivary flow. Individuals with removable dentures had a significantly higher secretion rate in palatal glands compared with those without dentures. Lower secretion rates and higher protein concentrations were seen in minor gland saliva during hyposalivation and this applied especially to irradiated subjects. Compared with their respective matched controls, irradiated patients had a more acidic plaque after a sugar challenge than the Sjögren's syndrome patients. A low buccal gland secretion rate was correlated to increased plaque acidity in hyposalivation subjects. The number of acidogenic microorganisms had a more important effect on this acidity in the healthy controls. The present studies also showed that buccal gland secretion rates and IgA concentrations were positively correlated to whole saliva secretion rates and IgA.

Key words: age, dental plaque pH, dentures, gender, health; IgA, medication, minor salivary glands, oral dryness, saliva, salivary secretion rate.

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