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Saliva as a diagnostic fluid

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In humans, the normal biological role of salivary gland is to produce saliva. Saliva is a clear, slightly acidic mucoserous exocrine secretion. The saliva provides an important role in the host defense mechanism of the upper gastrointestinal tract, which is controlled by variable secretory molecules like proteins and growth factors.

Saliva has many components, and each one has a specific function. One of the main components is the electrolytes, including sodium, potassium, calcium, magnesium, bicarbonate, and phosphates. Other components of saliva include immunoglobulins, proteins, enzymes, mucins and nitrogen products (urea and ammonia). Saliva contains a high concentration of calcium and phosphate ions. Saliva is supplied by blood; therefore, biomarkers present in blood could be also present in saliva. Saliva is emerging as a diagnostic fluid, as it is easy to collect, noninvasive, inexpensive, safe, and contains valuable diagnostic material. It has been used to detect several different diseases including cystic fibrosis, cardiovascular diseases, diabetes, HIV, oral and systemic cancer, caries, periodontal disease, and auto-immune connective tissue diseases like rheumatoid arthritis, systemic lupus erythematosus, and Sjogren syndrome (SS).

Our study: Our objective was to determine whether saliva from patients with SS has higher levels of inflammatory mediators as compared to healthy controls. Moreover, we sought to establish whether a novel collection device was superior to a conventional saliva collection method for detection of inflammatory cytokines. We recruited SS (n = 9) and healthy controls (n = 8) and collected saliva from them using a conventional method and a novel collection device termed the RNAPro SAL. We analyzed saliva using a cytokine multiplex array. Our results showed that the conventional method is superior to the RNAPro SAL for the detection IL-1α and IL-1β. In contrast, the RNAPro SAL was superior to the conventional method in detecting IL-2, IL-5, TNFβ, and IL-23. Saliva collected with the RNAPro SAL device revealed that SS patients showed higher levels of TNFβ and lower levels of IL-5 compared to healthy controls. Therefore, cytokines in saliva may be useful in distinguishing SS patients, and the RNAPro SAL may be a valuable novel collection device for salivary diagnostics.

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