IMPACT OF SALIVA ON HEALTH: AN OVERVIEW

Supriya Sharma¹*, Priyanka Gaur² and Shalini Gupta¹

¹Dept. of Oral Pathology and Microbiology, Faculty of Dental Sciences, King George’s Medical University (KGMU), UP, Lucknow.
²Dept. of Physiology, King George’s Medical University (KGMU), UP, Lucknow.

*Corresponding Author: Dr. Supriya Sharma
Dept. of Oral Pathology and Microbiology, Faculty of Dental Sciences, King George’s Medical University (KGMU), UP, Lucknow.

ABSTRACT
Saliva is a versatile, slightly acidic mucouserous exocrine biofluid which is produced by three major, (parotid, submandibular and sublingual) and around 450-750 minor salivary glands of the oral cavity. Whole saliva is more complex mixture of the secretions of the major and minor salivary glands, mucosal transudations, gingival crevicular fluid, bacteria and their products, fungi and viruses, cellular components and food debris. Saliva has been suggested as a important diagnostic tool over the last decade due to its easy and non-invasive accessibility along with its important biomarkers, such as genetic material and proteins. The advantages of salivary diagnostic tool are readily available, easy to collect, non-invasive, simple and low-cost storage.

KEYWORDS: Saliva, Secretions, Potential diagnostic tool, Biomarkers.

INTRODUCTION
Saliva is an aqueous fluid of the oral cavity used as a potential diagnostic tool over the last decade due to its simple and non-invasive accessibility along with its important abundance of biomarkers, such as genetic material and proteins. It has been suggested that detection of early systemic and oral disease is not only necessary to reduce disease severity and prevent complications, but also to increase success rate of therapy. Moreover, salivary-based diagnostic techniques can possibly allow screening of an entire population for a specific disease at the right time. The method of Saliva collection methods and biomarkers need to be standardized and validated. It is expected that the advent of specific and sensitive salivary diagnostic tools and the establishment of defined guidelines will make salivary diagnostics a reality in the near future for the detection and confirmation of systemic and oral diseases.¹

Composition of Saliva
Saliva is a complex secretion found in the oral cavity, composed of mixture of secretory products (organic and inorganic products). Saliva is a mucouserous aqueous fluid, its 93% by volume is secreted by the three major salivary glands and the remaining 7% by the 450-750 minor salivary glands. Saliva is clear, mucouserous, versatile, and important body fluids, supplying a large range of physiological needs.³ It is diagnostic complex biofluid consist entire library of hormones, enzymes, proteins antibodies, antimicrobial constituents, and cytokines.⁴

As A Diagnostic Tool
In the forthcoming time, there are abounding possibilities that salivary diagnostics can be used as a powerful diagnostic tool for safeguard but also to preserve those, which already have been saved.

It will be a very supportive tool for confirmatory diagnosis, prognosis resolution, and therapy response monitoring. Screening an entire population for a certain type of systemic and oral diseases will be made possible in the near future by employing salivary diagnostics.²

Protective Role of Saliva
A high rate of secretion, together with mastication, helps to abolish food particles and sugars from the oral cavity. A short clearance time depreciate the length of time that sugar is available for production of acid by the bacteria in the dental plaque. Saliva plays a vital role in
preservation of the teeth, owing to its cleaning actions as well as its property of acid neutralization, antisolubility, and antimicrobial properties. During hypo salivation, which can be associated with irradiation in the head and neck area, Sjogren’s syndrome, medication or surgery, or in older age groups with ill health, an increased prevalence of caries and various diseases are often found.\(^5\)

In the oral cavity, saliva helps in mastication, speech, deglutition, tissue lubrication, mucosal protection against infiltration, antibacterial, antifungal, post-eruptive maturation, ionic balance regulation at enamel remineralisation, acid diffusion limitation as well as deposition of acquired enamel pellicle\(^4\)\(^\text{a}\). The salivary flow rate can be affected, reversibly or irreversibly, by various physiological and pathological factors. Saliva plays an crucial role in maintaining the rectitude of the oral structures in the digestion and in controlling the various oral infections. The part that saliva plays in protecting teeth from caries can be summarized under four aspects: diluting and eliminating sugars and other substances, buffer capacity, balancing demineralization/ remineralisation and antimicrobial action.

Saliva performs important protective roles in the oral cavity. The more fundamental protective qualities of saliva water and pH control are receiving less attention. The recent advances in the genomics and proteomics of saliva as well as saliva’s roles in tissue coating, alimentation and regulation of the oral micro flora are also reported.\(^6\)

Amerongen et al (2002)\(^7\) suggested that saliva is of paramount importance for the maintenance of oral health. This is based on the numerous studies reporting subjective and objective functional losses that occur in persons who lack the ability to produce adequate volumes of saliva. Saliva plays a defensive role by inhibiting and killing effects so that ecology exists in an equilibrium system in the oral cavity. This is one example of the crucial role played by saliva in the maintenance of general health, but similar observations can be made in other patients suffering from an impaired saliva secretion. It is identified that saliva contains many components which interact with microorganisms and controlling the composition of the oral micro flora.\(^2,6,7,8\)

The numerous studies reported subjective and objective functional losses that occur in persons who lack the ability to produce adequate volumes of saliva having the problems of dry mouth feeling (xerostomia), difficulty with swallowing food as well as an increased susceptibility for opportunistic infections. The last issue points to an active protective role of saliva in maintaining oral health under normal conditions. The mild climate present in the oral cavity, i.e. an elevated temperature, a high humidity and regular supply of foodstuffs, fosters the growth of a myriad of different aerobic and anaerobic microorganisms, which together form a complex and stable ecosystem.\(^8\)

Saliva and Immunity

It has been also observed that immunoglobulin’s in saliva have received much attention in relation to their specific protective function to a single type of microorganism. However it has been clearer that, in addition to acquired immune system, an innate immune system has also been secreted into saliva. In the last years more light has been shed on the protective functions of the peptides and of the (glycoprotein’s of the innate immune system, contributing to the first line of oral defense in maintaining the steady state of the system.\(^6,9\)

Saliva and Microorganism

Saliva has a significant impact on the colonization of microorganisms in the oral cavity. Salivary components may participate in this process by one of four general mechanisms: binding to micro organisms to facilitate their clearance from the oral cavity, serving as receptors in oral pellicles for microbial adhesion to host surfaces, inhibiting microbial growth or mediating microbial killing, and serving as microbial nutritional substrates. The molecular interaction of salivary components with bacteria (primarily the oral Streptococci and Actinomyces) explores the implications of these interactions for oral bacterial colonization and dental plaque formation, molecular mechanisms controlling bacterial colonization of the oral cavity may suggest method to prevent serious infections that may follow microbial colonization of the oral cavity.\(^10\)

CONCLUSION

Saliva is a promising option for diagnosing certain disorders and monitoring the evolution of certain pathologies or the dosage of medicines or drugs. Its advantages as a diagnostic tool include its being easy to obtain and the positive correlation between many parameters in serum and saliva. In many situations, saliva already contributes for laboratory investigation in various oral diseases. The advantages of using saliva in laboratory diagnosis are that it is readily available, easy to collect, non-invasive, and has a simple, low-cost storage.

Conflict of Interest: None declared.

REFERENCES