A Commentary on Natural Salivary Defenses

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Commentary

To present an update on our current understanding of how saliva and its contents directly and indirectly impact oral bacteria, hence modulating and maintaining a healthy oral microbiota a, as well as the correlations with symbiosis and dysbiosis.

The introduction of new genomic technologies, such as next-generation sequencing and bioinformatics, has significantly expanded our knowledge and understanding of the oral microbiome and its significance in health. The oral microbiota in health is extremely varied, with over 700 distinct bacterial species found in the mouth cavity. The number of resident species in each healthy human is expected to be less than 250-300 distinct species, with the genus Streptococcus being the most numerous.

The oral cavity provides a moist and warm environment rich in host-derived nutrients such as dietary sugar, salivary proteins, glycoproteins, and gingival crevicular fluid, making it an ideal environment for the growth of a wide range of microorganisms, including bacteria, fungi, viruses, archaea, and protozoa. The oral cavity has a variety of habitats for microbial colonization, including teeth, gingival sulcus, connected gingiva, tongue, cheek, lip, and hard and soft palate, each of which has its own microbiota. Furthermore, teeth are the only natural non-shedding surfaces in the human body, allowing for substantial biofilm development and microbial habitation. Similarly, non-shedding surfaces on dental restorations, fillings, permanent prosthodontics, dentures, and implants might impact biofilm production and the makeup of the resident oral bacteria.

The oral microbial ecology is complex and diverse, and it plays a vital role in the development and maintenance of oral health. The host (behaviour and defence systems), the local environment, and the microorganisms themselves, that is, their capacity to attach, co-aggregate, interact withother species, and their pathogenicity, all impact the creation and maintenance of the oral microbiota.

Saliva is one of the factors that play a vital part in oral homeostasis and symbiosis. Whole saliva is a complex fluid combination generated by three paired main salivary glands, namely the parotid, submandibular, and sublingual glands, as well as countless tiny salivary glands found in the oral mucosa. Furthermore, non-glandular components of entire saliva include desquamated oral epithelial cells, food debris, bacteria, gingival crevicular fluid, and blood-derived chemicals (plasma proteins, erythrocytes and leucocytes). The levels of the two latter in saliva are affected by the degree of periodontal and oral mucosal inflammation.

Saliva serves to build the acquired enamel pellicle and mucosal pellicle, which coat the mouth hard and soft tissues, respectively, and so helps to influence the initial adhesion and colonization of bacteria and determine the makeup of the resident oral microbiota. Furthermore, saliva not only aids in the removal of microorganisms and dietary carbohydrates from the oral cavity, but it also provides nutrients to colonizing bacteria via the breakdown of dietary starch, lipids, and proteins, as well as bacterial metabolism of salivary components such as glycoproteins. Furthermore, salivary mucins have the ability to bind and agglomerate bacteria, inhibiting their adhesion and colonization. Saliva also contains antimicrobial proteins and peptides such as mucins, lactoferrin, lysozyme, lactoperoxidase, statherin, histatins, and antibodies (secretory immunoglobin A, sIgA) Furthermore, saliva aids in mastication, swallowing, and speaking, as well as beginning digestion. The goal of this review article is to provide an update on our current understanding of how saliva and its many elements directly and indirectly impact oral bacteria, hence modulating and maintaining a healthy oral microbiota, as well as the correlations with symbiosis and dysbiosis.

This article emphasizes the importance of saliva in developing and sustaining the ecological balance of the resident oral microbiota. Saliva helps to produce the salivary pellicle, which covers the oral hard and soft tissues and influences the initial adherence and colonization of bacteria. Saliva not only aids in the removal of food carbohydrates and germs from the oral cavity, but it also provides nutrition to bacteria via the enzymatic degradation of dietary starch and proteins, as well as salivary glycoproteins. Furthermore, saliva contains proteins such as mucins, which inhibit the adhesion of some microbes to oral surfaces *via* binding and aggregation processes. Saliva also contains antimicrobial proteins and peptides such as mucins, lactoferrin, lysozyme, lactoperoxidase, statherin, histatins, and secretory immunoglobulin A.

A well-balanced oral microbiota is essential for maintaining dental health and symbiosis. Conditions related with salivary gland hypofunction, reduced oral clearance, low salivary pH, and changed salivary composition frequently result in dysbiosis and an increased risk of oral illness.

Saliva has an important function in maintaining the symbiotic interaction between the host and the oral microbiota. The normal equilibrium of the oral microbiome is frequently altered in circumstances of salivary gland dysfunction, leading to dysbiosis and the related risks of gingivitis, caries, and fungal infection.