



## Microflora of the Mouth

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The human oral cavity is one of the most diverse microbial habitats in the body. It contains a complex community of bacteria, fungi, viruses, and other microorganisms collectively known as the oral microflora or oral microbiota. More than 700 bacterial species have been identified in the oral cavity, although the composition varies considerably between individuals and between different oral sites. These microorganisms colonize the teeth, tongue, gingiva, buccal mucosa, palate, and saliva.

The oral cavity provides several favorable conditions for microbial growth, including moisture, nutrients, a relatively stable temperature, and numerous surfaces for attachment. However, the microflora differs from one location to another. Streptococcus species are among the earliest and most abundant colonizers of the oral cavity. Streptococcus salivarius is commonly found on the tongue and other soft tissues, while Streptococcus sanguinis and Streptococcus mitis are frequently associated with tooth surfaces. Other important organisms include Actinomyces, Veillonella, Neisseria, Lactobacillus, and various anaerobic bacteria such as Fusobacterium, Prevotella, and Porphyromonas.

The microorganisms present in a healthy mouth generally exist in a state of microbial equilibrium with the host. The normal oral microbiota performs several beneficial functions. It contributes to the maintenance of the local environment, competes with potentially pathogenic organisms for nutrients and attachment sites, participates in the metabolism of dietary components, and interacts continuously with the host immune system. Saliva also plays an important role by providing antimicrobial factors such as

lysozyme, lactoferrin, immunoglobulin A, and other protective molecules.

When the balance between the host and its microorganisms is disturbed, dysbiosis may occur. Changes in oral hygiene, diet, salivary flow, systemic health, smoking, medications, and other environmental factors can alter the microbial composition. This may promote the growth of disease-associated microorganisms.

Dental plaque is a highly organized biofilm formed by microorganisms attached to the tooth surface and embedded in an extracellular matrix. Early plaque colonizers, particularly oral streptococci, attach to the acquired pellicle covering the tooth. As the biofilm matures, additional bacterial species join through a process known as microbial succession. Inadequate plaque control can lead to an increased accumulation of pathogenic organisms.

The oral microflora has a major role in the development of common oral diseases. Dental caries is associated with acid-producing and acid-tolerant bacteria, particularly Streptococcus mutans and certain other streptococci and lactobacilli. These organisms metabolize fermentable carbohydrates and produce acids, resulting in a fall in plaque pH and eventual demineralization of dental hard tissues. In periodontal disease, a shift toward a more anaerobic and proteolytic microbial community is associated with inflammation and destruction of periodontal tissues.

Organisms such as Porphyromonas gingivalis, Tannerella forsythia, and Treponema denticola are important periodontal pathogens.

Candida, particularly *Candida albicans*, is another important member of the oral microbiota. It may be present in healthy individuals without causing disease. However, alterations in local or systemic conditions can allow Candida to proliferate and cause oral candidiasis.

In conclusion, the microflora of the mouth represents a dynamic and highly organized microbial ecosystem. A balanced oral microbiota is essential for maintaining oral health, whereas disruption of this balance can contribute to dental caries, periodontal disease, candidiasis, and other oral infections. Therefore, maintaining good oral hygiene, adequate salivary function, a balanced diet, and regular dental care is important for preserving the healthy microbial equilibrium of the oral cavity.