

# Role of Microbial Communities on the Tongue of Halitosis Patients

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## COMMENTARY

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### DESCRIPTION

Halitosis is an oral condition caused by a rise within the concentration of Volatile Sulfur Compounds (VSCs), like alkyl mercaptan and hydrogen sulfide, generated as a consequence of bacterial metabolism on the tongue biofilm. Microbial communities on the tongue of halitosis patients are studied by bacterial culture, 16S rRNA taxonomic studies and metagenomics. However, there is no report on the microbial gene-expression profiles. During this study, we have a tendency to performed RNA sequences of tongue coating samples from control individuals and halitosis patients with completely different levels and compositions of VSCs, as determined by gas chromatography

During this met transcriptomic study, the activity of Streptococcus, Veillonella and Rothia species was related with halitosis-free people whereas Prevotella, Fusobacterium and Leptotrichia species were related to halitosis. Though methyl mercaptan is considered an indicator of halitosis, the metatranscriptome of patients within which only this VSC was present in elevated levels was the same as that of halitosis-free people. Veillonella dispar, Streptococcus parasanguinis and Rothia mucilaginosa were over-represented in halitosis-free communities, suggesting that these species might be used as a halitosis-free biomarker. In distinction, the abundance of Prevotella shahi and Fusobacterium nucleatum were considerably higher once sulfide concentration was over the established halitosis threshold, creating these species' purported halitosis biomarkers. Finally, gene expression profiles showed a big over-expression of genes involved in L-cysteine and L-homocysteine synthesis in halitosis-free people and an over-expression of genes responsible for aminoalkanoic acid degradation into hydrogen sulfide in halitosis patients. Additionally, nitrate reduction into a group was conjointly over-expressed in halitosis-free patients. Finally, halitosis was related to communities that degrade amino acids and scale back chemical compounds, whereas tongue communities that turn out L-cysteine from sulfide which scales back nitrate were related to the absence of halitosis. The latter might give new methods to treat this condition [1].

Halitosis is an extremely prevalent condition characterised by oral mephitic [2]. A Swedish study with quite 800 participants showed as 5% prevalence whereas in a Chinese population (2500 participants) the estimated

proportion exaggerated up to 25.5%. A recent systematic revision calculable a 32.8% prevalence of halitosis once examining 545 publications. Counting on the origin of the oral mephitic, halitosis may be differentiated into intra-oral (90% of cases), extra-oral and transient halitosis. Many factors are shown to have an effect on unhealthy breath, as well as death pulpal exposure, deep unhealthy lesions, specific food things, oral infections, periodontitis, faulty restorations, reduced secretion flow, smoking and poor oral hygiene.

Previous epidemiological reports recommend that different odoriferous molecules might even be accountable or contribute to unhealthy breath, as well as volatile aromatic compounds and (poly) amines, short/medium-chain fatty acids or organic acids, alcohols, volatile aliphatic compounds, aldehydes and ketones [3]. Numerous microbiological and epidemiological studies have shown that VSCs area unit principally created by oral macrobiotic degradation of aminoalkanoic acid, amino acid and essential amino acid, likewise as tryptophane, essential amino acid and essential amino acid [4,5]. Most intra-oral halitosis is related to microorganism activity on the tongue and it's been reported that tongue coating in halitosis patients is thicker than that in healthy people dental medicine pockets may be a supply of halitosis and it's tongue coating in disease patients is four times additional overabundant compared to healthy people, suggesting that each disease might be interconnected. It's conjointly been shown that sulfide has cytotoxic and pro-inflammatory properties under some conditions, doubtless contributory to inflammation and tissue damage in periodontitis and thus halitosis might have control on human health beyond the undesirable consequences of oral unhealthy odor.

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