

Microscopic evaluation of tongue dorsum biofilm from halitosis patients: an ex vivo study using confocal laser scanning microscopy (CLSM)

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A category of oral biofilm which is still not well understood is the one coating the tongue, although various reports have associated its presence with halitosis in patients (1). The aim of the study was to visualize the three-dimensional bacteria distribution within the biofilm in order to better understand the ecological balance which regulates it. Tongue plaque samples from four halitosis-diagnosed patients and four healthy volunteers were analysed and compared. The biofilm was collected using a 0.1ml sterile inoculating loop. The visualization of the tongue dorsum biofilm was performed combining fluorescence in situ hybridization (FISH) and confocal laser scanning microscopy (CLSM) (2). Eubacteria, *Streptococcus* spp. and *Fusobacterium nucleatum* were stained using specific fluorescent genetic probes. Morphological analysis by CLSM illustrated the different distribution of the species which were tracked: *Streptococcus* spp. appeared immersed within the samples, while *F. nucleatum* was found in the peripheral areas of the samples. Furthermore, *F. nucleatum* appeared to exist without the presence of the *Streptococcus* spp. in the halitosis group. This study showed the architecture of tongue dorsum biofilm by means of imaging techniques, highlighting the distribution of the tracked bacterial species within the biofilm sample of the plaque.

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References

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Keywords

Tongue dorsum biofilm; Confocal Laser Scanning Microscopy (CLSM); oral bacteria; halitosis.