

Enhanced adhesion of *Streptococcus mutans* to hydroxyapatite after exposure to saliva

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Streptococcus mutans cells form robust biofilms on human teeth and are strongly related to caries incidents. Hence, understanding the adhesion of *S. mutans* inside the human oral cavity is of major interest for preventive dentistry. We present atomic force microscopy-based single-cell force spectroscopy measurements of *S. mutans* cells on hydroxyapatite, the mineral component of teeth. For comparison, we also use *Staphylococcus carnosus* cells which are non-pathogenic and not related to the oral cavity. We observe for almost all measurements a significant difference in adhesion strength for *S. mutans* as well as for *S. carnosus* cells. However, the increase in adhesion strength after saliva exposure is much higher for *S. mutans* cells compared to *S. carnosus* cells. Our results demonstrate that *S. mutans* cells are well adapted to their natural environment, the oral cavity. This ability promotes the biofilm-forming capability of that species and hence the production of caries-provoking acids. In consequence, understanding the fundamentals of this mechanism may pave a way towards more effective caries-reducing techniques [1].

[1] C. Spengler et al., Journal of Molecular Recognition, 30.7, e2615 (2017).