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**Cell Adhesion Modification of *Streptococcus viridians* in the Presence of Xylitol** JASON ESMACHER, Wayne State University, BLAIR VIDA KOVICH, Oakland University, MICHAEL GIANGRANDE, Oakland Community College, PETER HOFFMANN, Wayne State University — There is scientific documentation that those who chew gum sweetened by the sugar alcohol xylitol report a dramatically lower incident of both dental caries and otitis media compared to those who chew conventional gum sweetened by sucrose. An explanation contends that xylitol interferes with the ability of *Streptococcus viridian* (SV) to form biofilms which is a necessary precursor to the bacteria's ability to damage human tissues. We have used atomic force microscopy to study the cell wall/fimbria properties at the nanonewton level in both the presence and absence of xylitol. The first set of measurements used varying concentrations of xylitol incorporated within the incubation medium. The second used non-xylitol grown bacteria, the xylitol was added externally at various concentrations. Our study suggests that growing SV with xylitol reduces their ability to adhere together. Additionally, externally added xylitol showed grouping of cell adhesion to a relatively narrow nanonewton spread that is concentration dependent. Measurement of the adhesion properties of the bacterial cell wall have found that there is a dramatic increase in the cell wall's firmness which simultaneously accompanied a decrease in its ability to support adhesion, even at very low concentrations of xylitol.

Jason Esmacher  
Wayne State University

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