

Effects of short-term xylitol chewing gum on pro-inflammatory cytokines and *Streptococcus mutans*: a randomized, placebo-controlled trial

Özer Akgül¹, Asli Topaloğlu Ak², Sevgi Zorlu², Didem Öner Özdaş², Melisa Uslu², and Dilara Çayırğan²

¹Istanbul Aydın University, Medical Faculty

²Istanbul Aydın University, School of Dentistry

June 28, 2020

Abstract

Introduction: Dental caries is an infectious disease with predominantly of cariogenic bacteria such as *Streptococcus mutans* (S. mutans). Xylitol is considered as one of the effective agents that can limit this dental infection. In this randomized, placebo-controlled trial, we aimed to evaluate the potential reflection of short-term xylitol consumption on pro-inflammatory cytokines (TNF- α , IL-6 and IL-8) and S. mutans counts by ELISA and qPCR (Quantitative real-time PCR), respectively. **Methods:** In this study, 154 participants were assigned to two groups, control and xylitol. Dental examination, saliva and swab samples were done at baseline and at 3-week for clinical and microbiological assessment. **Results:** In xylitol group at the end of 3-week, gingival and plaque index scores were significantly decreased with respect to baseline values ($p < 0.001$ and $p < 0.05$, respectively). The salivary concentration of TNF- α , IL-6 and IL-8 were statistically declined at 3-week, more so than those at baseline in xylitol group ($p < 0.001$). S. mutans expression was reduced about 5-fold at 3-week use of xylitol and it was a statistically significant difference compared to baseline ($p < 0.001$). **Conclusion:** Intriguingly, even short-term consumption of xylitol might play a favorable role in maintaining the oral health status, possibly as a result of decreasing the release of pro-inflammatory cytokines and the counts of S. mutans. Nonetheless, this investigation warrants further endorsement.

Hosted file

Main Document Placebo IJCP.doc available at <https://authorea.com/users/337571/articles/463168-effects-of-short-term-xylitol-chewing-gum-on-pro-inflammatory-cytokines-and-streptococcus-mutans-a-randomized-placebo-controlled-trial>



