

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 Çayırhan²

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>



