

REMINERALIZATION OF ENAMEL SUBSURFACE LESIONS BY XYLITOL CHEWING GUM CONTAINING FUNORAN AND CALCIUM HYDROGENPHOSPHATE

Sroisiri Thaweboon¹, Siriruk Nakornchai², Yasuo Miyake³, Takaaki Yanagisawa³,
Boonyanit Thaweboon¹, Surin Soo-ampon⁴ and Duangjai Lexomboon⁵

¹Department of Microbiology, ²Department of Pediatric Dentistry, ⁴Department of Physiochemistry, ⁵Department of Community Dentistry, Faculty of Dentistry, Mahidol University, Bangkok, Thailand; ³Department of Ultrastructural Science, Oral Health Science Center, Tokyo Dental College, Chiba, Japan

Abstract. The aim of the present study was to determine the remineralization effects of xylitol chewing gum containing funoran and calcium hydrogenphosphate on enamel subsurface lesions in humans. The study was a double-blind, randomized, cross-over design, with 4 types of gum: (1) xylitol gum, (2) xylitol gum containing funoran and calcium hydrogenphosphate, (3) sugar gum, and (4) gum base as a control. Seven subjects were instructed to wear removable lingual appliances, with half-slab insets of human enamel containing demineralized subsurface lesions. They were told to chew gum for 20 minutes 4 times per day for 7 days. Upon completion of each treatment the enamel half-slabs were paired with their respective demineralized control half-slabs, embedded, sectioned, and subjected to microradiography and densitometric image analysis, for measurement of the level of remineralization. The mean area of remineralization ($\Delta Z_d - \Delta Z_r$) and mean percent remineralization (%R) in those chewing xylitol gum containing funoran and calcium hydrogenphosphate were significantly higher than the corresponding values for xylitol gum, sugar gum and gum base. Chewing xylitol gum containing funoran and calcium hydrogenphosphate has a significant effect on the remineralization of initial caries-like lesions of the teeth.

Correspondence: Sroisiri Thaweboon, Department of Microbiology, Faculty of Dentistry, Mahidol University, 6 Yothi Road, Bangkok 10400, Thailand.

Tel: 66 (0) 2203 6410

E-mail: dtstw@mahidol.ac.th