

Six-month polyol chewing-gum programme in kindergarten-age children: a feasibility study focusing on mutans streptococci and dental plaque

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Aim: To investigate the use of polyol-containing chewing gums in a day-care centre (kindergarten) setting as a means to affect the growth of mutans streptococci and dental plaque. **Design:** Over a period of six months, 123 five-year-old children chewed xylitol (X group), sorbitol (G group), or did not chew gum (C group). Consumption of xylitol, and sorbitol was 4.5 to 5.0 g per day and subjects consumed in five supervised daily chewing episodes four at the day-care centres and one at home. **Methods:** Interproximal dental plaque was sampled at baseline and after six months for a laboratory study of mutans streptococci counts. The Quigley & Hein plaque index procedure was used. Interviews and questionnaires elucidated the acceptability of the programme. **Results:** Parents and kindergarten personnel regarded the programme as an important, additional procedure to promote better oral health. The children regarded the use of chewing gum as a pleasurable experience. Compared with groups G and C, there was a statistically significant reduction of mutans streptococci in the interproximal plaque in the X group. The Quigley & Hein plaque index scores tended to decrease in the X group, while no such trend was observed in the G group. **Conclusions:** Habitual use of relatively small daily quantities of polyol-containing chewing gum by young children may be regarded as an important additional caries-preventive procedure in a combined day-care centre and home setting. Especially xylitol-containing chewing gum may significantly reduce the growth of mutans streptococci and dental plaque which may be associated with dental caries.

Key words: Xylitol, sorbitol, mutans streptococcus, plaque

Several clinical trials, school prevention programmes, and laboratory studies have shown that habitual use of chewing gums containing dietary sugar alcohols (polyols), notably xylitol and D-glucitol (sorbitol), can be associated with a significant reduction in the incidence of dental caries¹⁻⁴. These studies, along with available basic science information on the biochemical⁵, microbiologic⁵, and physical-chemical^{3,6-10} properties of polyols, indeed suggest that confectionaries and certain oral hygiene

adjuvants (for example, dentifrices¹¹⁻¹³) can be regarded as useful additions to existing oral hygiene strategies aimed at preventing dental caries. This information has also encouraged several national dental associations and other regulatory bodies to issue specific polyol-related recommendations and endorsements to be used in advertising¹⁴⁻¹⁷. Recently, a United States' National Institute of Health consensus report supported the use of polyols as an important means to prevent dental caries^{18,19}.