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Similarity of the effects of erythritol and xylitol on some risk factors of dental caries.

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#### Abstract

Several sugar alcohols (polyols) have been promoted as potential sugar substitutes in caries limitation. However, differences in the effects of simple alditol-type sugar alcohol homologues on dental plaque have not been compared in clinical tests. The effects of 6-month use of erythritol (a sugar alcohol of the tetritol type), xylitol (a pentitol) and D-glucitol (sorbitol, a hexitol) were investigated in a cohort of 136 teenage subjects assigned to the respective polyol groups or to an untreated control group (n = 30-36 per group). The daily use of the polyols was 7.0 g in the form of chewable tablets, supplemented by twice-a-day use of a dentifrice containing those polyols. The use of erythritol and xylitol was associated with a statistically significant reduction ( $p < 0.001$  in most cases) in the plaque and saliva levels of mutans streptococci. The amount of dental plaque was also significantly reduced in subjects receiving erythritol and xylitol. Such effects were not observed in other experimental groups. Chemical analyses showed D-glucitol to be a normal finding in dental plaque while xylitol was less consistently detected. Erythritol was detected in measurable amounts only in the plaque of subjects receiving this polyol. Erythritol and xylitol may exert similar effects on some risk factors of dental caries, although the biochemical mechanism of the effects may differ. These in vivo studies were supported by cultivation experiments in which xylitol, and especially erythritol, inhibited the growth of several strains of mutans streptococci.

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