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Effects of maltitol and xylitol chewing-gums on parameters involved in dental caries development.

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Abstract

AIM: The effects on plaque parameters of sugar free chewing-gums (CG) sweetened with either maltitol or xylitol were assessed to better understand the role polyols can play in dental caries prevention.

MATERIALS AND METHODS: A double-blind, parallel, randomised, controlled study was conducted in China. Subjects (N = 258, age = 13 to 15 years-old) were divided into 4 groups: 2 receiving polyols CG, containing respectively maltitol or xylitol, a group receiving gum base (placebo) and a negative control group not receiving any gum. CG were chewed for 30 days. This corresponds to a 10 g consumption of polyol per day. Plaque parameters (growth, pH, bacteria and insoluble glucans) were evaluated throughout the experimental period.

RESULTS: All parameters studied were significantly modified with gum base compared to no-gum: plaque pH increased; plaque growth, bacteria (*S. mutans*, *S. sobrinus*, *A. viscosus* and *Lactobacillus*) and insoluble glucans decreased. Maltitol and xylitol CG led similarly to a higher plaque pH (AUC, $p < 0.05$) on short (at baseline after the first CG consumption) and long term (after 4 weeks of daily CG consumption), with or without saliva stimulation compared to both control and placebo groups. They led to a decrease in plaque growth ($p=0.02$) over the experimental period compared to controls. Moreover, they significantly reduced the concentration of 4 cariogenic bacteria species ($p < 0.05$) in dental plaque compared to gum base.

CONCLUSION: Sugar free CG sweetened with either maltitol or xylitol can similarly reduce plaque acidogenicity compared to gum base through a decrease in oral bacteria presence. The use of a gum base placebo allowed to isolate effects on parameters involved in dental caries development specific to maltitol and xylitol, and to show these effects were similar.

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