18. Effect of gum chewing on the pH of dental plaque.

Saliva stimulation by gum chewing has been reported to neutralize plaque acidity. We compared the plaque pH response to bread with honey followed by sucrose-or sorbitol-sweetened gum chewing for 20 minutes. Bread and honey was chosen as previous work in our laboratory found this a worst case challenge in terms of the extent and duration of the pH decline. The study design was factorial with: 4 subjects x 2 replicates x 3 treatments. Each subject received each of the 3 treatments: food (bread and honey), food followed by sorbitol chewing gum, and food followed by sucrose chewing gum. Subjects accumulated plaque for 3 days on partial prosthesis with a glass electrode set in the proximal space in the gap left by a missing first molar. Plaque pH was monitored for 150 min: baseline(0-10), food (11-30), +/- gum chewing (31-50), post-chew monitoring (51-150).

ANOVA of mean plaque pH showed no difference between treatments at baseline. Significantly higher pH levels (p < 0.01) were shown with both gums compared to no gum during the chew and post-chew phases. Plaque pH data were also converted to absolute acid values (cH). Food alone produced 1703 mumol/min.; food followed by sorbitol chewing gum produced 53 mumol/min.; and food followed by sucrose gum produced 156 mumol/min. While the post-chew pH curves were not identical for sucrose vs. sorbitol chewing gums, both neutralized plaque acidity, probably due to the induced salivary action.