

Table 1.-- Sugar Alcohols and Plaque pH, Acid Production

Study	Study Design	Subjects	Methods	Results	Comments
Birkhed and Edwardsson, 1976 (Ref. 39)	In vitro study to evaluate the effects of various S substrates on acid production from individual plaque samples	Not given	Subjects (Ss) instructed not to clean teeth for 2 days (d) before experiment and not to eat or drink anything the morning of the experiment. Plaque was removed for 10 seconds (sec) before plaque was removed from the buccal, lingual, and approximal surfaces of the teeth. Plaque treatment is described in the study. A 0.2M glucose (GLU) soln was added to plaque suspension and acid production was followed for 10 minutes (min). Repeated acid production experiments performed with 10 µl substrates: malt, lactose, sucrose, mannitol, fructose, Swedish HSH, French HSH, and glucose syrups. Plaque pH was also determined. Ss rinsed with distilled water, plaque was collected and pH measured. 0.1 M S soln added to plaque, concentrated soln of GLU or S. Plaque again taken and pH determined at 2, 5, 10, 20, and 30 minutes (min) after the rinse. Mouth rinses repeated at 1 week intervals with the test substances. Student's t-test for paired observations used when comparing fermentability of various substrates and when measuring pH.	<p>Acid Production Rates</p> <p>Substrates</p> <p>MANN, X</p> <p>GLU</p> <p>French HSH</p> <p>Swedish HSH</p> <p>Lactose</p> <p>Fructose</p> <p>Glucose syrups</p> <p>Percent</p> <p>0</p> <p>10-20</p> <p>20-40</p> <p>40-60</p> <p>50-70</p> <p>80-100</p> <p>100</p> <p>Results of pH measurements showed that X, MALT, MANN, and French HSH increased or in some cases only slightly decreased plaque pH (pH remaining about 6.8 to 7.0). SDR the pH was about 6.8 to 7.0, but the pH was about 6.7 to 6.8. Swedish HSH decreased pH to just below 6.0 after 5 min. The pH increased to over 6.0 after 30 min. Lowest plaque pH in S and fructose was about 5.5 or below.</p>	<p>Authors report error of method to measure acid production has been calculated to be 10-15% in duplicate experiments with GLU.</p> <p>French HSH is said to contain fewer high molecular weight hydrogenated polysaccharides than Swedish HSH and, therefore, is less fermentable.</p> <p>Authors note that lower pH values are obtained if the pH of interoral plaque is measured. It is also noted that pH methodology used in this study does not give information of pH of plaque on a tooth, rather it gives overall averages.</p>
Birkhed and Skude, 1978 (Ref. 51)	In vitro study to compare acid production from HSH and soluble starch	11 adult subjects	Subjects were instructed to avoid oral hygienic procedures for 2 d. Ss rinsed with tap water; dental plaque was then removed. Acid production activities (APA) from 3% GLU solutions, boiled soluble starch, and Swedish HSH were determined in 0.1 ml samples of dental plaque. In a separate experiment (Ss n=4) APA was determined in 1% concentrations (0.003 to 0.014 w/v) of Swedish HSH and starch. Student's t paired t test for comparison between APA was used.	<p>APA expressed as a % of that from GLU (mean values)</p> <p>GLU</p> <p>Starch</p> <p>HSH</p> <p>%</p> <p>99.7</p> <p>75.7</p> <p>61.5</p> <p>APA from soluble starch and HSH was optimal at a substrate concentration of 0.03 - 6%.</p>	<p>Authors note that Swedish HSH is more fermentable than HSH 80/55 made in France. Compared to GLU, Swedish HSH is very fermentable, although the rate is slower.</p> <p>Results of this study raise questions regarding the usefulness of Swedish HSH in dental health.</p>