

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

Study	Study Design	Subjects	Methods	Results	Comments																																										
Birkhed et al., 1978 (Ref. 40)	In vitro study of acid production from GLU and SOR in dental plaque suspensions and in vivo pH changes after mouth rinses	18 subjects, 25-40 years old	<p>Prior to study, all Ss used SOR dentifrices and consumed sporadically SOR-containing products (gums, candies). No oral hygiene 2 (d) before the 2-day period. Plaque was scraped off buccal, lingual, and approximal surfaces. Methods for measuring acid production are described in the study. After acid production was followed for 6 min, 1 ml of 0.2 M GLU solution control (C) was added and acid production was followed for another 6 min. This procedure was repeated using SOR as a substrate.</p> <p>One week after acid measured, Ss rinsed with water, then rinsed for 30 sec with 10% GLU soln. Sample plaque was taken immediately and at time 2, 5, 10, 20 and 30 min after the rinses. Analysis carried out using the pH values or the differences between pH values. Paired t-test used for statistical analysis.</p> <p>Adaptation period: Ss also instructed to rinse 6 x per day for 6 weeks with a 10% SOR soln without swallowing it. After 4 weeks, plaque was collected for determination in vitro acid production and after 5 and 6 weeks of adaptation, plaque pH in vivo was measured after mouth rinses with GLU and SOR.</p>	<p>Results showed acid production with SOR before the SOR adaptation period was 11.1% of that resulting from the GLU control. After the adaptation period, acid production from SOR increased to 30.4%, a significant increase ($p < 0.001$) from the before adaptation period.</p> <p>Mean plaque pH with 10% GLU soln before (A) and after (A) SOR adaptation</p> <table><tr><td></td><td>0</td><td>2</td><td>5</td><td>10</td><td>20</td><td>30</td></tr><tr><td>A</td><td>6.77</td><td>6.06</td><td>5.88</td><td>5.77</td><td>6.25</td><td>6.55</td></tr><tr><td>A</td><td>7.04</td><td>6.35</td><td>6.11</td><td>5.98</td><td>6.38</td><td>6.66</td></tr></table> <p>(p) < 0.01 < 0.05 < 0.05 - - -</p> <p>Mean plaque pH with 10% SOR soln before and after SOR adaptation</p> <table><tr><td></td><td>0</td><td>2</td><td>5</td><td>10</td><td>20</td><td>30</td></tr><tr><td>B</td><td>6.91</td><td>6.36</td><td>7.01</td><td>6.39</td><td>7.00</td><td>6.99</td></tr><tr><td>B</td><td>7.07</td><td>6.94</td><td>6.83</td><td>6.76</td><td>6.67</td><td>6.86</td></tr></table> <p>(p) - - - < 0.05 < 0.01 -</p> <p>Significant difference between time (t) 0 and t = 10 and between t = 0 and t = 20, $p < 0.01$; and t = 0 and t = 30, $p < 0.05$.</p>		0	2	5	10	20	30	A	6.77	6.06	5.88	5.77	6.25	6.55	A	7.04	6.35	6.11	5.98	6.38	6.66		0	2	5	10	20	30	B	6.91	6.36	7.01	6.39	7.00	6.99	B	7.07	6.94	6.83	6.76	6.67	6.86	<p>Authors state that increased in vitro acid production from SOR after the adaptation period shows that adaptation occurred. Authors note that initial plaque pH values in the presence of GLU were a little higher after adaptation than before and these differences may have influenced statistical analyses of pH differences. However, pH curves for GLU before and after adaptation ran almost parallel to each other, whereas the SOR curves did not. SOR pH values after adaptation decreased slightly over 30 min, although differences were significant at 10 and 20 min.</p> <p>Authors conclude that these experiments suggest that the fermentability of SOR was more pronounced after adaptation than before. They also conclude that SOR can be regarded as a satisfactory low-carbohydrate substitute for fermentable sugars, such as S, fructose and GLU.</p>
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