Previous plaque-pH telemetry studies reported the acidogenicity of various foods and dietary patterns to estimate potential cariogenicity. To avoid patient discomfort, improve compliance, and minimize electrode malfunctions, we have simplified your telemetry method and compared it to your previously published model. A removable partial prosthesis using a glass electrode set in the proximal space left by a missing first molar was used in 2 subjects. In the modified method, subjects suspended oral hygiene for 3 days, the prosthesis was then installed on the 3rd day, and accumulated plaque was spread on the electrode and covered using gauze for retention. In comparative tests, the same subjects wore the prosthesis in the mouth during plaque accumulation. Test sessions compared the plaque pH response to 4 treatments: a 10% sucrose rinse, a 10% sorbitol rinse, a snack roll using marmalade and coffee, and the snack followed by gum chewing. Overall, pH curves were similar (mean baselines and minimas) and no significant differences in mean pH response were noted between the 2 methods. The modified method improved subject participation, demonstrated greater reliability, and showed Stephan curves comparable to conventional methods.