Superiority of a Powered Toothbrush in Plaque/Gingivitis Control

Carlos Guillermo Benítez Silva[1]*, Salim A. Nathoo[2], Luis R. Mateo[3], Brian Bloch[4], Yun-Po Zhang[5], Bayardo García-Godoy[5], and Matilde Hernández[5]

[1]Oral Care Clinical Research, Colgate-Palmolive Co. GTC, São Bernardo do Campo, SP, Brazil. [2]Oral Health Clinical Services, LLC. Piscataway, NJ, USA. [3]LRM Statistical Consulting, LLC. West Orange, NJ, USA. [4]Global Toothbrush R&D, Colgate-Palmolive Co. GTC, Piscataway, NJ, USA. [5]Oral Care Clinical Research, Colgate-Palmolive Co. GTC, Piscataway, NJ, USA.

Objectives: 12-week clinical study to investigate the efficacy of a powered toothbrush versus a manual toothbrush in reducing plaque/gingivitis.

Methods: Phase III, randomized, examiner-blind trial with healthy subjects. Subjects with ≥20 natural teeth, mean Löe-Silness gingival Index ≥1, and mean Navy Plaque Index ≥0.6 were included. Participants were randomly allocated to either the test toothbrush or standard reference toothbrush. Assessments were conducted at baseline, first use, 1-, 6-, and 12-week visits. At baseline, subjects received pre-and-post-brushing plaque examinations and were instructed to brush twice daily/2 minutes with their assigned toothbrush and regular fluoride toothpaste for 12 weeks. A paired t-test was used for within-treatment comparisons. ANCOVA was used for treatment group comparisons.

Results: 82 subjects completed the study. Test group exhibited statistically significant ($p<0.001$) pre-to-post brushing plaque score reductions in whole-mouth, gumline, and interproximal (76.5%, 261.1%, 87.5%, immediately after (IA) respectively) relative to the control group. Test group exhibited significant plaque score reductions at 1-, 6-, and 12-weeks in whole-mouth (93.8%, 166.7%, and 220%); gumline (325%, 700%, and 421.4%); and interproximal (119%, 224.1%, and 615.4%) relative to the control group. Test group demonstrated significant gingival scores improvements at 1-, 6-, and 12-weeks in whole mouth of (700%, 387.5%, and 426.7%); gumline (600%, 385.7%, and 320%); and interproximal (500%, 400%, and 360%) relative to the control group

Conclusion: This 12-week clinical study demonstrated that the powered toothbrush is significantly more effective in reducing established plaque/gingivitis than the standard reference manual toothbrush.