

A comparative clinical study of extrinsic tooth stain removal with two electric toothbrushes (Braun Oral-B D7 and D9) and a manual brush

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Oral-B

Grossman, E., et al., New Institutional Service Company, Northfield, New Jersey
Am. J. Dent., 1996; 9:S25-S29

Objectives

The primary objective of this clinical study was to compare the ability of the Braun Oral-B Plaque Remover (D7), the Braun Oral-B Ultra Plaque Remover (D9) and a manual toothbrush to remove extrinsic dental stain. A secondary objective was to assess the safety of the D9 in clinical use.

Design

Randomized, three-way cross-over.

Materials and Methods

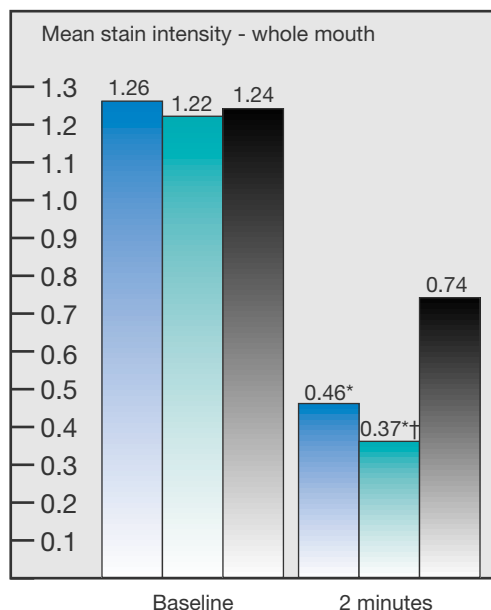
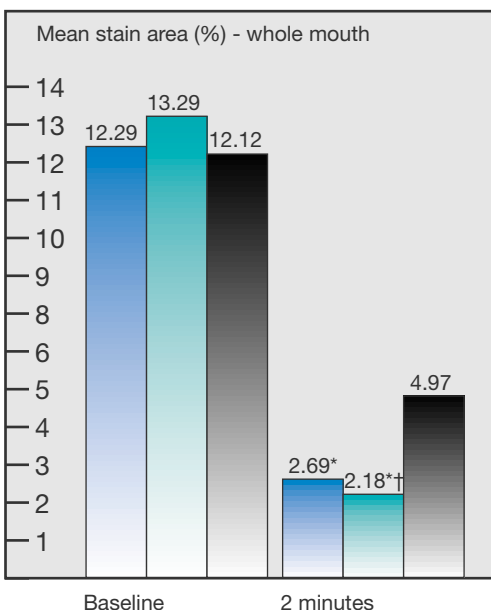
Twenty-four healthy volunteers, aged 18-65 years, entered the study. All subjects underwent a complete oral prophylaxis and then began a 4-day forced-staining regimen, which consisted of rinsing 8 times daily with 15 ml of 0.12 % chlorhexidine gluconate for 30 seconds followed by a rinse with 10 ml brewed tea for 2 minutes. Each rinse was performed at least once hourly and no oral hygiene procedures were allowed.

On day 5, a baseline examination of stain accumulation was made which assessed the area and intensity of the stain and the percentage of sites where stain affected <10 % of the total tooth area. Subjects then brushed their teeth for 2 minutes with one of the three randomly allocated toothbrushes. Brushing was interrupted at 30 seconds, 1 minute and 2 minutes to be re-scored for tooth staining and to be examined for evidence of soft tissue irritation or abrasion.

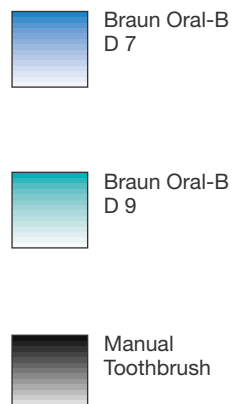
This procedures (prophylaxis, 4-day staining and brushing) was then repeated two more times after subjects had crossed over to the second and third test toothbrush. Throughout the study all assessments were made by the same qualified examiner.



Results



Stain Removal Results



* Statistically significant difference from manual group (p<0.05).
† Statistically significant difference from D7 group (p<0.05).

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All three toothbrushes significantly reduced staining compared with baseline at each of the timepoints ($p < 0.05$) and most stain was removed in the first minute of brushing. The Braun Oral-B D7 and D9 were significantly better at removing stain than the manual toothbrush at all sites and timepoints for stain area, stain intensity and the number of sites with $< 10\%$ stain (< 0.05), except for stain intensity at facial sites after 30 seconds brushing.

The Braun Oral-B D9 was consistently more effective than the D7, with the difference with respect to stain area and stain intensity reaching statistical significance ($p < 0.05$) after 2 minutes brushing.

All the brushes were found to be safe and there was no evidence of hard or soft tissue abrasion.

Clinical Comment

This study confirms the efficacy of the D7 over a manual brush with respect to removal of extrinsic stain. In addition, it demonstrates that the D9 with its higher frequency and redesigned brush-head is also more effective than the manual toothbrush.



Although both the D7 and the D9 are highly effective and significantly better than a manual toothbrush, this study shows that the D9 is even more effective than the D7.

The study is important as it shows the D9 to have the same excellent safety profile as the D7.