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## Effect of two powered toothbrushes on gingivitis

**Language:** English

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**Introduction**

Although it is well-known that inflammation of the gingiva is the consequence of plaque accumulation, there are few long-term studies focussing on the effect of electric toothbrushes on reduction of gingivitis. The aim of this study was to compare the long-term effect of two powered toothbrushes on gingivitis.

**Objectives**

*Hypothesis:* There are statistical significant differences between the two brushes tested concerning the long-term effect on gingivitis reduction.

*Null hypothesis:* No difference can be detected between the two brushes.

**Material and Methods**

Toothbrushes

- Braun Oral-B 3D Plaque Remover® (D15)  
 Oscillating and rotating movement at a frequency of 63 Hz  
 Pulsating movement (170 Hz)
- Rowenta Dentasonic® (Dentasonic)  
 Vibration at a frequency of 233 Hz ("microrotation")  
 additional single tufted "microbrush®" head

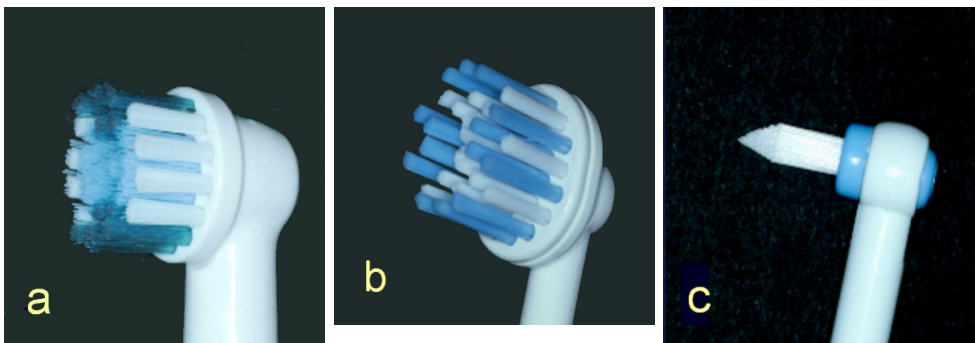


Fig. 1: Brush-heads used in the study:

Braun Oral-B EB 17

Rowenta softspeed®-clip

Rowenta microbrush®-clip

Subjects

- 80 healthy subjects
- written informed consent
- no dental therapy
- no medication that could afflict the outcome of the study
- Clinical assessment, instructions for use

Cycle of study

- Dental examination, start of acclimatisation period
- Dental examination (Baseline), home use of one test-brush for three months (randomised scheme)
- Dental examination (3 months), GBI (Silness&Løe) & PCR (Turesky 1970)

Statistical Analysis

Double data entry, plausibility check  
 Statistical unit: single subject  
 PowerAnalysis: SamplePower® (SPSS Inc.) Statistical Software Package SPSS  
 Kolmogoroff-Smirnov/Liljefors-Test  
 Non parametric Wilcoxon Test for paired samples ( $p < 0.05$ )

## Results

- In the D15 group gingivitis was reduced over all from 1.06 (0.97; 1.15) to 1.01 (0.86; 1.14,  $p=0.001$ ).
- In the Dentasonic group gingivitis remained almost unchanged with 1.03 (0.93; 1.16) and 1.03 (0.90; 1.22).
- The differences between the two brushes over all were statistically significant ( $p=0.005$ ).
- In the D15 group the relative reduction reached 16.6% at central surfaces.

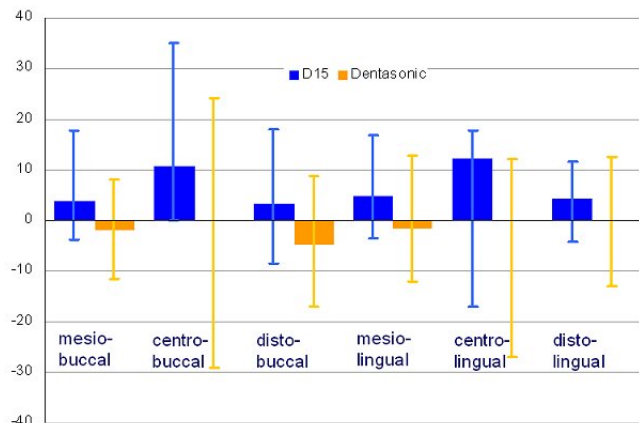


Fig. 2: Relative Reduction of gingival index [in %] between baseline and visit 4.

Surfaces	Brush	Baseline	3 months	p	Relative Red
over all	D15	1,06 (0,97;1,15)	1,01 (0,86;1,14)	< 0,001	7,7 (-3,4;19,0)
	Dentasonic	1,03 (0,93;1,15)	1,03 (0,90;1,22)	n.s.	-1,2 (-16,2;9,1)
	p	n.s.	n.s.		0,005
buccal	D15	1,04 (0,96;1,16)	1,02 (0,77;1,15)	0,005	6,0 (-3,5;21,6)
	Dentasonic	1,03 (0,92;1,14)	1,05 (0,89;1,22)	n.s.	-4,2 (-16,8;10,5)
	p	n.s.	n.s.		0,013
lingual	D15	1,05 (0,94;1,22)	0,98 (0,79;1,14)	0,001	8,1 (0,3;19,7)
	Dentasonic	1,06 (0,89;1,12)	1,03 (0,85;1,25)	n.s.	-0,3 (-14,0;9,6)
	p	n.s.	n.s.		0,009
mesial	D15	1,11 (1,00;1,23)	1,07 (0,95;1,15)	0,005	5,1 (0,0;16,5)
	Dentasonic	1,04 (0,99;1,17)	1,07 (1,00;1,27)	n.s.	0,0 (-12,0;8,1)
	p	n.s.	n.s.		0,020
central	D15	0,98 (0,83;1,13)	0,86 (0,63;1,09)	0,001	16,6 (-3,7;32,6)
	Dentasonic	0,96 (0,81;1,13)	0,98 (0,69;1,18)	n.s.	-3,4 (-22,1;17,8)
	p	n.s.	n.s.		0,005
distal	D15	1,07 (1,00;1,17)	1,08 (0,97;1,17)	n.s.	3,2 (-5,6;11,2)
	Dentasonic	1,07 (0,98;1,15)	1,07 (0,98;1,24)	n.s.	-1,4 (-12,1;9,5)
	p	n.s.	n.s.		n.s.
proximal	D15	1,09 (1,00;1,18)	1,07 (0,96;1,18)	0,014	5,7 (-4,4;10,4)
	Dentasonic	1,06 (0,99;1,15)	1,08 (0,98;1,26)	n.s.	1,0 (-11,6;7,3)
	p	n.s.	n.s.		0,036

Tab. 1: Gingivitis values before and after 3 months of use as well as relative gingivitis reduction [%] of the toothbrushes used. The differences were tested for statistical significance by means of the non parametric Wilcoxon test for paired samples (p). Listed are the over all results as well as the results separate for different surfaces.


## Conclusions

The D15 reduced the gingival index significantly, whereas there was no reduction detected in the Dentasonic group. In several subgroups of the D15 group the gingivitis reduction reached more than 10% and has to be valued as clinically relevant. The D 15 has to be valued as effective in reducing plaque and gingivitis.

*This poster was submitted by Dr. med.dent. Bernadette Pretzl.*

**Poster Faksimile:**


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**EFFECT OF TWO POWERED TOOTHBRUSHES ON GINGIVITIS**

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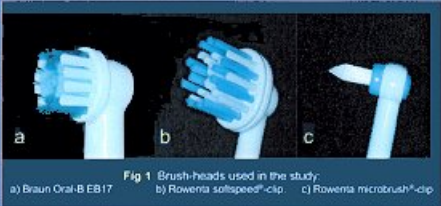
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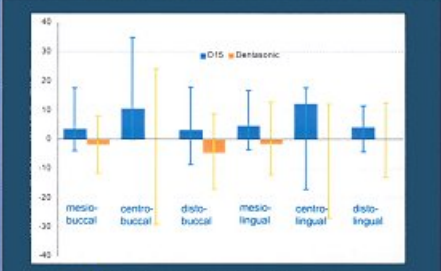
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**Acknowledgement**

This study was supported by Braun Oral-B (Kronberg, Deutschland)



**Fig 1** Brush-heads used in the study:  
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**Fig 2:** Relative Reduction of gingival index [%] between baseline and visit 4

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