

PHILIPS

sonicare

Power Flosser

Biofilm Removal

in-vitro study

In-vitro biofilm removal from human enamel using a Philips Sonicare Power Flosser

B. Gottenbos; W. Suntuens; S. Hötzl
Philips Research Europe, 2019

Objective

Quantify removal of in-vitro dental biofilm using the Philips Sonicare Power Flosser oral irrigator.

Methodology

Dental biofilms were grown from pooled human saliva on human enamel disks for 4 days, according to an established academic model¹. The biofilms (n=6) were treated with the Philips Sonicare Power Flosser for 3 seconds using the Quad Stream nozzle. To quantify the number of bacteria before treatment, the biofilm volume was measured using optical coherence tomography (OCT) and the bacterial cell density was determined from untreated control samples (n=6) using confocal laser scanning microscopy (CLSM). After treatment the number of remaining bacteria were counted using CLSM. Additionally scanning electron microscope (SEM) images were recorded.

Results

While before treatment 0.2 mm thick dense biofilms were present, after treatment only scattered groups of bacteria remained. Quantitative analysis showed 99.96% removal for the Quad Stream nozzle.

Conclusions:

The Philips Sonicare Power Flosser oral irrigator with Quad Stream nozzle removes over 99.9% of the bacteria in this established laboratory model of dental biofilm.

Biofilm Removal from Human Enamel

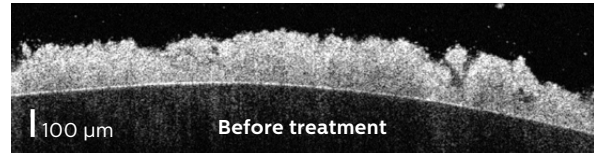
Cell Removal (%)

100.00
99.98
99.96
99.94
99.92
99.90
99.88
99.86

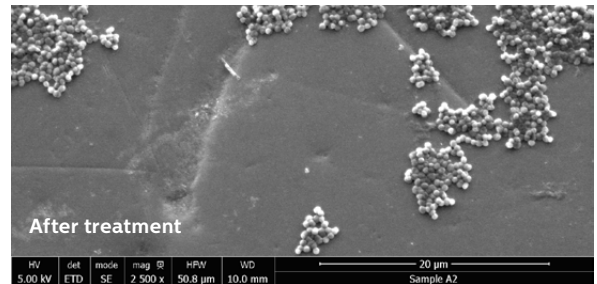
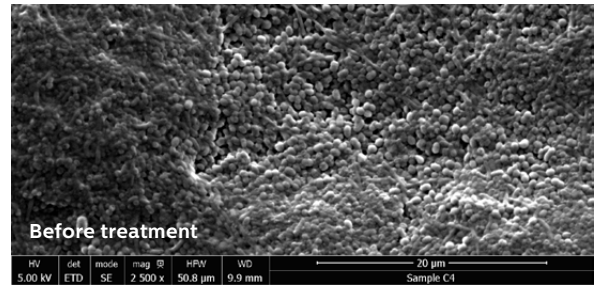


Quad Stream

>99.9% of the cells are removed



OCT cross-sections: no visible biofilm remains after treatment.



SEM images at 2500x magnification.