

PHILIPS

sonicare

Power Flosser

Plaque removal

In-vitro study

In-vitro comparison of area of plaque removal by Quad Stream nozzle versus Waterpik Classic Jet nozzle

Gottenbos B, Balakrishnan A

Philips Research, NL; Philips Oral Healthcare, USA
Study completed in 2021

Objective

The objective of this in-vitro study was to compare the area of plaque removal by Philips Sonicare Quad Stream and Waterpik Classic Jet nozzles, when used per the directions for use (DFU) instructions for both devices.

Methodology

Streptococcus mutans biofilms were cultured for 40 hours in 3% sucrose medium on four different half-tooth samples in the 2 molar subgingival model (with artificial soft tissue). Samples were imaged on microscope imaging system before and after cleaning treatment. Some samples were also imaged using optical coherence tomography (OCT). Philips Sonicare Power Flosser was operated using the Quad Stream nozzle while Waterpik 660 was operated using the Classic Jet nozzle.

Treatment times for both nozzles were normalized to one second per tooth (buccal and lingual) along the gingival margin, equivalent to 60 seconds for a full mouth. The treatments were performed per the directions for use (DFU) for both nozzle types.

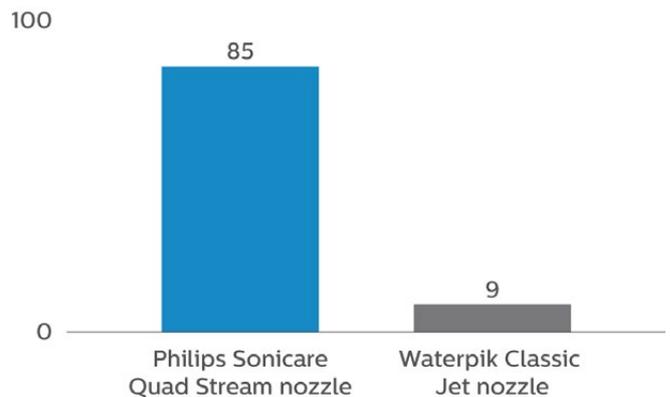
Results

The results after the treatment with the Philips Sonicare Quad Stream and the Waterpik Classic Jet nozzles are shown in Figure 1. The mean % area of plaque removal by the Philips Sonicare Quad Stream nozzle was 85% while that by the Waterpik Classic Jet nozzle was 9%. Philips Sonicare Quad Stream nozzle cleans up to nine times (85/9=~9X) the area cleaned by Waterpik Classic Jet nozzle, when tested per DFU. Philips Sonicare Quad Stream nozzle covers up to eight times more ((85-9)/(9)=~8.4) area than that covered by Waterpik Classic Jet nozzle.

Figure 1:

Plaque removal

Chart of mean % plaque biofilm area removed



Conclusions

The in-vitro plaque removal area coverage by Philips Sonicare Quad Stream nozzle when used with the Sonicare Power Flosser was eight times more than that of the Waterpik Classic Jet nozzle used with the Waterpik-660. Philips Sonicare Power Flosser Quad Stream nozzle performs nine times as efficiently as Waterpik 660 in relation to plaque removal surface area coverage.