Clinical Efficacy of a Newly-developed Device for Measuring the Bacterial Counts of Dental Plaque

—Evaluation of Oral Hygiene Status—

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Abstract

Purpose: This study was designed to evaluate the clinical efficacy of bacterial counter, a newly-developed device for measuring the bacterial counts of dental plaque, by examining whether the device can assess oral cleanliness quickly and easily at the chair-side during clinical practice and whether the values measured by the device provide an indication of the oral hygiene status.

Materials and Methods: The number of plaque bacteria collected from Ramfjord index teeth of five subjects before (#16, #21, #36, #41) and after (#26, #11, #46, #31) brushing was measured by the device. The results were compared with the conventional anaerobic culture method. In addition, the total number of plaque bacteria collected from four representative Ramfjord index teeth (#16, #21, #36, #41) gathered from 29 new subjects was compared with the data collected by another well-known bacterial plaque index: the Plaque Control Record (O’Leary’s PCR) technique.

Results: The device effectively detected the reduction of plaque bacteria (p<0.001) after brushing. A positive correlation was found between the two measurement methods both before and after brushing (γ = 0.72, γ = 0.78, p<0.001). Furthermore, there was a significant correlation between the total number of plaque bacteria collected from the four representative teeth and O’Leary’s PCR values (γ = 0.59, p<0.01).

Conclusion: It is possible to determine the quantity of plaque bacteria quickly and easily using the Bacterial Counter with the same reliability as the conventional anaerobic culture method and O’Leary’s PCR. This study indicated that this device would be clinically useful for the assessment of oral hygiene status.

Key words: Measurement of bacterial counts of dental plaque, Oral hygiene status, Bacterial counter, Clinical efficacy