



Bacterial Contamination of Inanimate Equipment for the Oral Environment

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ABSTRACT

Purpose:

The introduction of digital scanning devices, such as the Aadva IOS Sensor (GC America), and the widespread use of composites in restorative dentistry, have complicated infection control protocols, as these devices come into direct contact with oral fluids and mucosa making routine disinfection problematic. Contamination may result from dental provider’s hands or by direct patient shedding of bacteria to the inanimate equipment, which is then able to survive up to several months on dry surfaces. The purpose of this investigation is to evaluate the effectiveness of surface disinfectants

Method:

The Aadva IOS Sensor and the GC America Composite Syringe were contaminated with organisms: *E. coli*, *P. aeruginosa*, *S. aureus*, *S. typhimurium*, *M. smegmatis*, and *C. albicans*. Organisms were grown in liquid culture in lysogenic broth at 37C except for *M. smegmatis* in tryptic soy broth (TSB), and *C. albicans* in yeast extract-peptone-dextrose (YPD) at 30C. Cultures were harvested and diluted with sterile PBS to 1x10⁸ colony forming units (cfu). To determine wipe efficacy, 10µl of pathogen preparation was applied to multiple locations on both devices and allowed to completely air dry at room temperature. Subsequently, the following surface disinfectants were evaluated: COEfect (GC America), CaviWipes (Metrex), DeFend (Mydent International), OptiCide Surface (Micro-Scientific) Wipes, and Birex Towelettes (Biotrol). Sterile water was used as a control. Following surface decontamination, as per manufacturer recommendations, each surface was sampled using a sterile swab and plated on an appropriate agar medium. All locations and disinfectant wipes/controls were tested in triplicate. Colonies were enumerated and cfu recorded after 36-hour incubation at 37C.

Results:

All surface disinfectant wipes showed no statistically significant difference for all organisms tested, in contrast to the water control where significant variation was observed for all pathogen backgrounds.

Conclusion:

All evaluated surface wipes were shown to be effective in disinfecting the multiple test locations of both dental devices.

METHODS

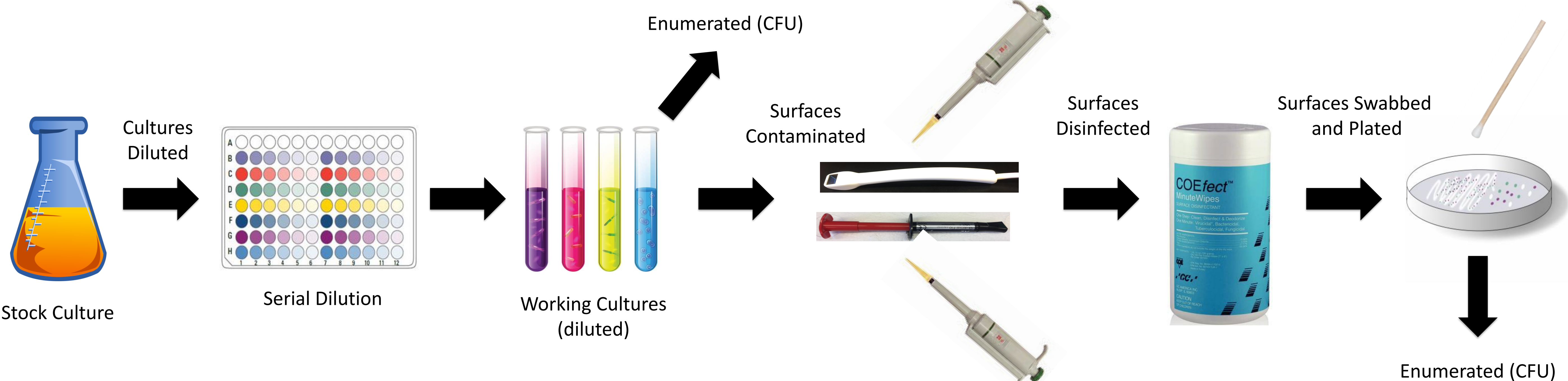
Test organisms – *E. coli*, *P. aeruginosa*, *S. aureus*, *S. typhimurium*, *M. smegmatis*, and *C. albicans*

Growth Medium – Lysogenic broth at 37C except for *M. smegmatis*, which was grown in TSB, and *C. albicans*, which was grown in YPD at 30C.

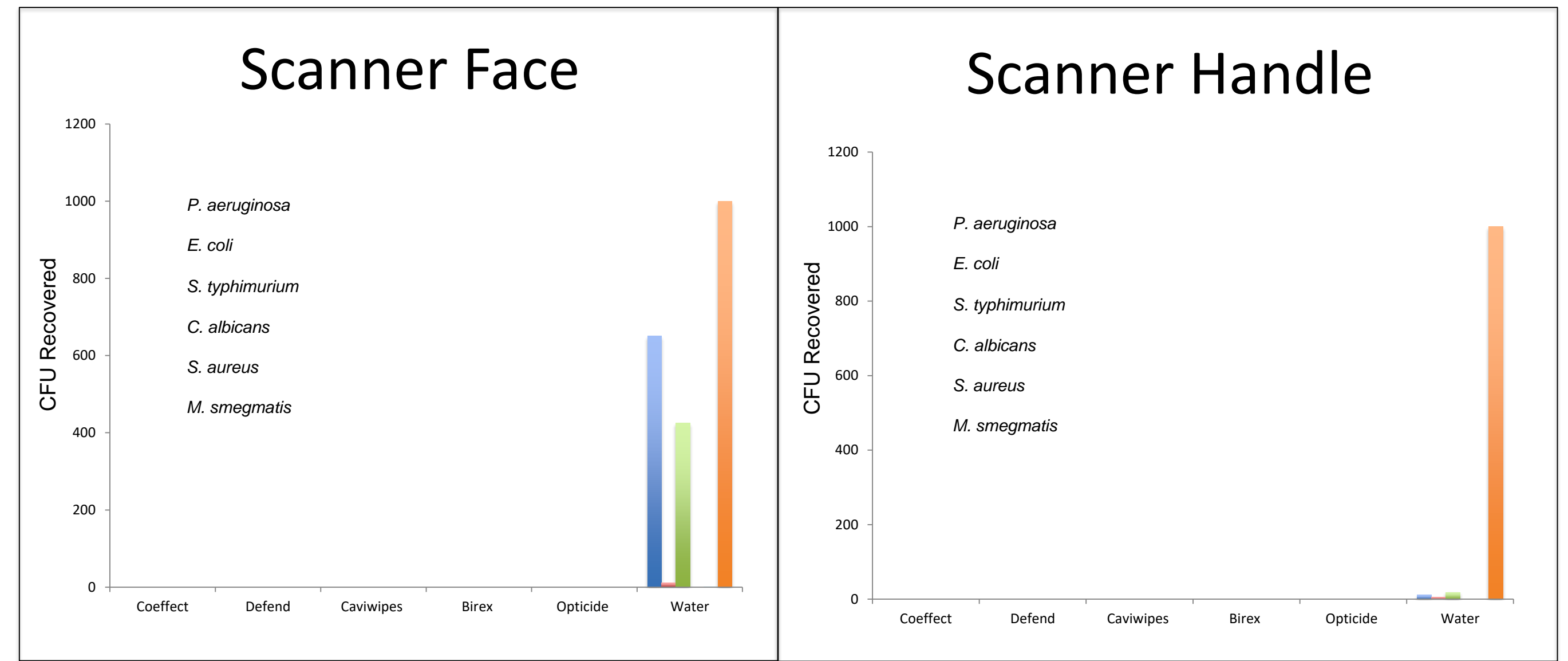
Disinfectants: COEfect (GC America), CaviWipes (Metrex), DeFend (Mydent International), OptiCide Surface (Micro-Scientific) Wipes, and Birex Towelettes (Biotrol) and water was the control.



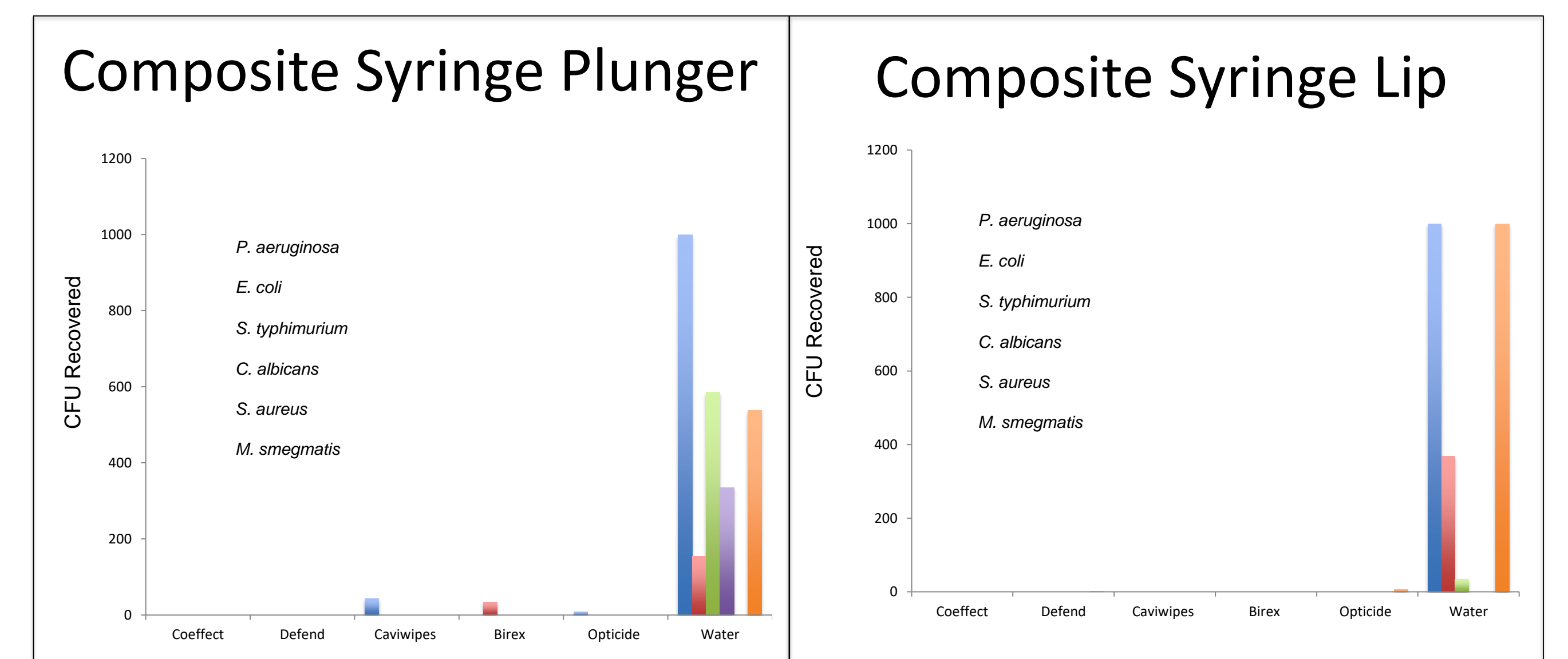
PROCEDURE



GC America Aadva Intraoral Scanner



GC America G-aenial Flo Composite Syringe



DISCUSSION

No statistically significant differences were observed after use of each of the disinfectant wipes tested, in contrast to the water control where significant variation was observed for all bacterial backgrounds.

All evaluated surface wipes were shown to be effective in disinfecting the multiple test locations of both dental devices.

DISCLOSURE

These studies were sponsored through a grant from GC America