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# Bacterial Reduction in Saliva Following Preprocedural Rinses *In-vivo*

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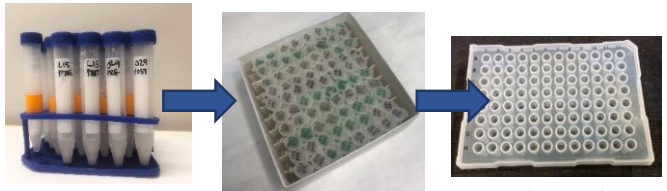
## INTRODUCTION & METHODS

Aerosolization of potentially infectious agents is a risk in many routine dental procedures. A pre-procedural rinse may mitigate risk by neutralizing bacterial load in saliva. This *in-vivo* study tested the antibacterial effects of four commercial rinses (Fig. 1) and a control in patients at a large university dental clinic.

Figure 1. Rinse Types


Figure 2. Saliva Processing Method



Saliva samples | Extracted RNA | Samples ready for RT qPCR

Saliva samples were collected from 93 patients prior to their routine dental hygiene appointments and again after a 5 minute wait. Participants were randomly assigned into 1 of 5 treatment groups (Fig. 1). RNA was extracted and RT qPCR run with bacterial 16S universal primer set. The effectiveness of each rinse was calculated as the percent reduction of target nucleic acids between pre- and post-rinse samples.

## RESULTS

ANOVA showed significant effect of treatment on percent reduction (p-value<0.0001) in bacterial concentration.

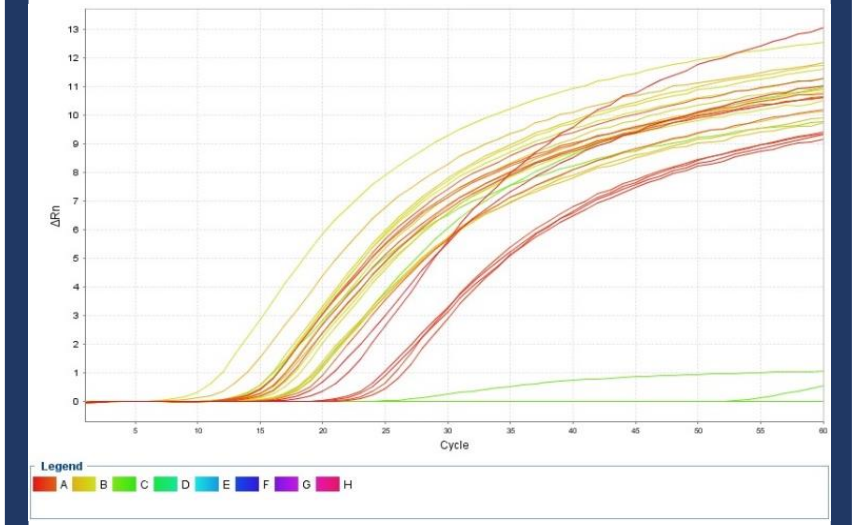



Figure 3. Amplification Plot of Pre & Post Rinses

Table 1. Change in Bacterial Load by Treatment

| Category | n samples | Mean % Change ± SD |
|---|---|---|
| CloSYS | 25 | -8.76 ± 13.19 |
| Control (Water) | 26 | -0.47 ± 15.3 |
| Iodine | 7 | +5.2 ± 22.46 |
| OraCare | 16 | +0.32 ± 15.36 |
| Peroxide | 19 | +16.45 ± 23.75 |

## RESULTS CONTINUED

CloSYS Ultra Sensitive rinse, a stabilized chlorine dioxide rinse, showed the greatest reduction in bacterial concentration, while hydrogen peroxide rinse had the lowest mean reduction, but highest variability.

## DISCUSSION

- While there was a significant difference, there were high levels of within-group variation. This may be due to differences in swish techniques and patient hygiene prior to the visit.
- 16S RNA analysis relies on forward and reverse primers binding to RNA segments present in all bacteria. Lysed cell walls and fragmented RNA results in a decreased count.
- Additional studies are underway to identify the source of this within-group variance and comparably poor performance of other rinses with a larger sample.

## ACKNOWLEDGEMENTS

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