Poster # 0262

# Inactivation of Human Parainfluenza Virus Using Colgate Oral Care Products


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## Objective

This study explores the potential effectiveness of certain Colgate toothpastes and mouthwash products to inactivate the human parainfluenza virus.

## Conclusions

Colgate mouthwash and toothpaste products inactivated human parainfluenza virus in this *in vitro* study.

## Results

**Current results show that the tested products were capable of inactivating the human parainfluenza virus.**

- **Current mouthrinses were able to neutralize the virus between 90-99% following 30 second exposure to the products. No observed increase in antiviral effectiveness was observed when exposure time was increased to 120 seconds (Table 1).**
- **The tested dentifrices were able to neutralize the virus by 99.4 and 99.9% after 120 second exposure to Dual zinc plus Arginine or Stannous fluoride toothpaste, respectively (Table 2).**

**Table 1. Mouthrinses Tested for Anti-Virus Activity**

| Product (Ingredient) | Contact Time (seconds) | Log10 TCID50 | Log reduction vs t=0 | %Reduction |
|---|---|---|---|---|
| Periogard (0.12% CHX) | 0 seconds | 4.9 | -- | -- |
| | 30 seconds | $\leq$ 2.9 | 2.0 | 99% |
| | 120 seconds | $\leq$ 2.9 | 2.0 | 99% |
| Plax (0.075% CPC) | 0 seconds | 3.8 | -- | -- |
| | 30 seconds | 2.8 | 1.0 | 90% |
| | 120 seconds | 2.8 | 1.0 | 90% |
| Optic White (2% $H_2O_2$) | 0 seconds | 3.3 | -- | -- |
| | 30 seconds | 1.68 | 1.62 | 97.6% |
| | 120 seconds | 1.68 | 1.62 | 97.6% |

**Table 2. Toothpaste Tested for Anti-Virus Activity**

| Product (Ingredient) | Contact Time (seconds) | Log10 TCID50 | Log reduction vs t=0 | %Reduction |
|---|---|---|---|---|
| Total DZA (Dual Zinc + Arg) | 0 seconds | 4.15 | -- | -- |
| | 30 seconds | $\leq$ 1.9 | 2.25 | 99.43% |
| | 120 seconds | $\leq$ 1.9 | 2.25 | 99.43% |
| Total $SnFl_2$ (0.454% Sn) | 0 seconds | 5.55 | -- | -- |
| | 30 seconds | $\leq$ 1.68 | 3.87 | 99.98% |
| | 120 seconds | $\leq$ 1.5 | 4.05 | >99.99% |

## Methods and Materials

The virus neutralization studies were carried out by Eurofins Scientific (Austin, TX) at the direction of Colgate-Palmolive. The human parainfluenza virus was exposed to the test products for either 30 or 120 seconds as instructed on the product label. After exposure, the viruses were chromatographically separated from the test products and collected. LLC-MK2 cells were challenged with the collected virus to enumerate any remaining infectious viral particles post-treatment. Any remaining infectious viral titers were enumerated based on observed cytopathic effect and calculated using Spearman-Karber method.

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