



Cavex ImpreSafe Long-Term Disinfection Study

Objective:

1. To evaluate the antimicrobial effectiveness of *Cavex ImpreSafe* on multiple clinical impressions taken over time.
2. To examine the effectiveness of used and re-used *Cavex ImpreSafe* preparations by assessing the product's disinfectant capabilities noting the number of uses with the length of time for solution activity

Materials and Methods:

Prepared dilutions of used *Cavex ImpreSafe (Cavex Holland BV)* solutions were periodically collected from a dental laboratory. These solutions included daily and weekly test intervals. The number of polyvinylsiloxane and polyether impressions disinfected with *Cavex ImpreSafe* was recorded prior to the culturing of the used solution. In accordance with the manufacturer's instructions, all impressions were disinfected in fresh *Cavex ImpreSafe* after long-term immersion in the used solution prior to further processing in the dental lab. Assays for possible microbial presence were performed in duplicate by culturing 0.5 mL aliquots of the used impression disinfectant onto trypticase soy agar containing 5% sheep blood and incubated aerobically at 37° C for 24 hours. The surfaces of two types of control impressions were swabbed and cultured in order to compare findings with *Cavex ImpreSafe* results. These included: 1) freshly collected alginate impressions cultured without any immersion in liquid; and 2) alginate impressions rinsed only with water for 15 seconds. In vitro microbial growth was assessed by counting resultant bacterial colonies.

Results:

Cultures from freshly taken alginate impressions demonstrated a variety of bacterial colonial forms (Figure 1). Rinsing the collected impressions with tap water for 15 seconds prior to taking swab samples reduced the number of detectable colonies, yet this procedure still left numerous bacteria on the material surfaces (Figure 2).

In contrast, all of the samples taken from the used *Cavex ImpreSafe* solution were negative for microbial growth. As shown in Table 1, this portion of the study was concluded after a seven-week interval.

Table 1. Summary of *Cavex ImpreSafe* impression disinfectant use over time

Days of <i>Cavex ImpreSafe</i> Use	Cumulative Number of Impressions Treated	Culture Result
0	0	negative
1	10; 14; 15; 17	negative
2	37	negative
6	70	negative
7	75	negative
14	118	negative
21	167	negative
28	216	negative
42	332	negative
49	380	negative
--	Untreated impression	positive
--	Impression + water rinse	positive



Figure 1: Bacterial culture of untreated salivary sample taken from surface of impression.



Figure 2: Bacterial culture of salivary sample taken from surface of impression after a 15-second rinse with tap water.

Discussion:

One of the frequently asked questions about disinfection of dental impressions pertains to the length of time immersion disinfectants can be re-used before they should be changed. In the literature supplied with *Cavex ImpreSafe*, the manufacturer states that the 3% solution is effective for approximately one week. In this preliminary study, however, a prepared solution was re-used for seven weeks to disinfect 380 impressions without any evidence of viable bacterial contamination within the disinfectant fluid. Accumulation of debris from the impressions was evident within the liquid by observing the color change of the preparation from day 1 to day 49 (Figure 3). Collected material from the impressions and the patients' mouths darkened the solution color.

Summary:

No viable bacteria were detected in a solution of *Cavex ImpreSafe* immersion disinfectant that was re-used for 49 days. In contrast, aerobic cultures of samples from untreated impressions demonstrated high concentrations of oral bacteria.

With regard to clinical relevance, this study proved that even with long-term use, *Cavex ImpreSafe* is a highly effective impression disinfectant. However, as accumulation of debris and color change of the preparation can influence the quality of impressions, it is strongly advised to renew the preparation at least every week. Besides, the solution level will decrease during usage and it is important that the level is sufficient to provide total immersion of treated impressions.



Figure 3: Color change noted between freshly prepared *Cavex ImpreSafe* (right) and 49 day-old reused solution (left).