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Microbiology Research Report

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Efficacy of Comparative Evacuation System Cleaners

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Purpose:

To evaluate and compare the ***Monarch CleanStream Evacuation System Cleaner*** *(Air Techniques)* to competitor evacuation line cleaners in their ability to keep dental evacuation line tubing clean after one month of clinical use.

Experimental Design:

The entirety of this study was conducted in a busy dental practice, all within the same operatory, using the same evacuation line location, and operated by the same trained dental professional. Each of the three comparative evacuation line cleaning products was exclusively used for one month in the operatory.

Prior to starting the study, the pre-existing evacuation line tubing of the saliva ejector was removed, and new tubing was installed. A dental test soil was flushed through the line to establish a baseline of debris. ***Monarch CleanStream Evacuation System Cleaner*** was utilized on the evacuation line following the pre-cleaning and daily use instructions and was then used exclusively in the operatory for one month, following the product instructions. After the month was completed, the saliva ejector line tubing was removed and a new line tubing was installed prior to the next product's testing period. The steps above were repeated for *A-dec Evacuation System Cleaner (A-dec Inc.),* and again for *PowerScrub Vacuum Line Cleaner (Solmetex)*.

The evacuation line tubing that was removed after each testing period was brought back to the laboratory for visual analyses. Five random one-inch sections of tubing were cut open and microscopically photographed from each of the treated evacuation line tubes. Control samples included random sections from new, unused, untreated tubing.

Results:

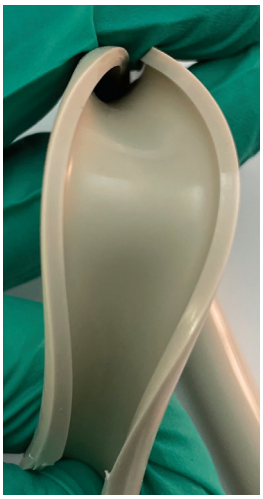
The inner tubing from the evacuation line treated with ***Monarch CleanStream Evacuation System Cleaner*** showed very little debris accumulation after one month of use (Figure 2). No build-up of debris was found with the naked eye throughout the entirety of the inner tubing (Figure 1).

The inner tubing from the evacuation line treated with *A-dec Evacuation System Cleaner* showed variable debris accumulation after one month of use (Figure 3). Patches of debris build-up were observed with the naked eye throughout the entirety of the inner tubing (Figure 1).

Lastly, the inner tubing from the evacuation line treated with *PowerScrub Vacuum Line Cleaner* showed variable debris accumulation after one month of use (Figure 4). Patches of debris build-up were observed with the naked eye throughout the entirety of the inner tubing (Figure 1).

The unused tubing serving as a control showed no debris within the tubing (Figure 5).

Figure 1.



Monarch CleanStream Evacuation System Cleaner treated line

A-dec Evacuation System Cleaner treated line

PowerScrub Vacuum Line Cleaner treated line.

Note: *The slit in the middle of the tubing occurred when cutting the tube open in the lab.*

Figure 2. Microscope photographs of inner line tubing treated with ***Monarch CleanStream Evacuation System Cleaner***

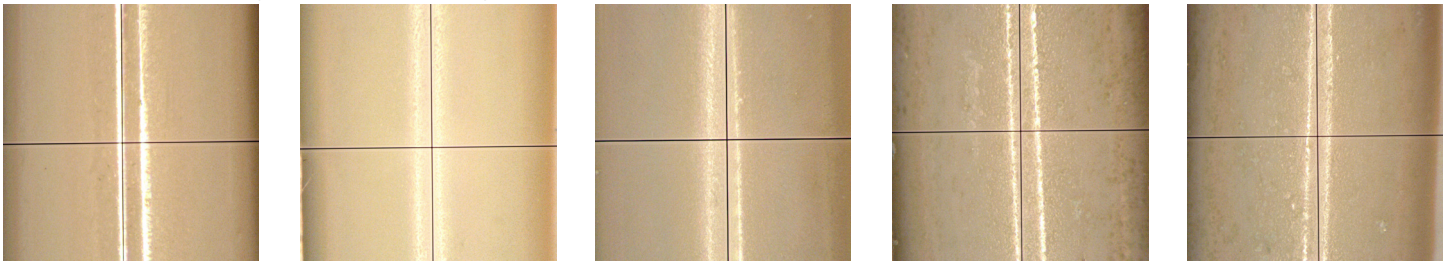


Figure 3. Microscope photographs of inner line tubing treated with *A-dec Evacuation System Cleaner*

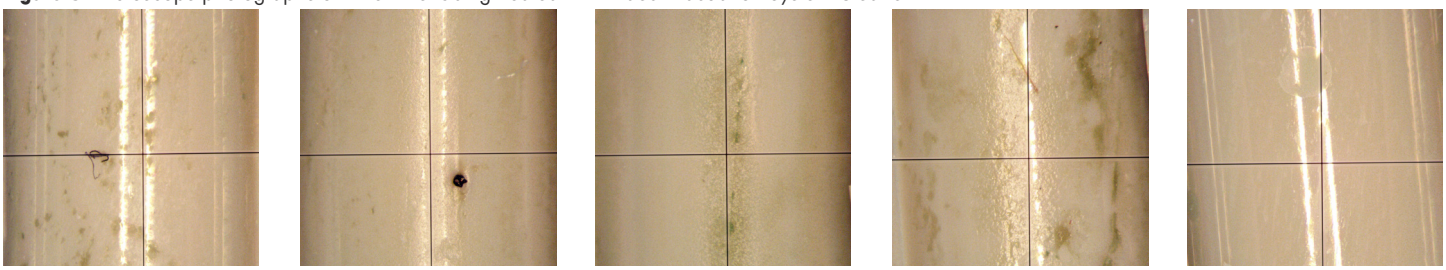


Figure 4. Microscope photographs of inner line tubing treated with *PowerScrub Vacuum Line Cleaner*

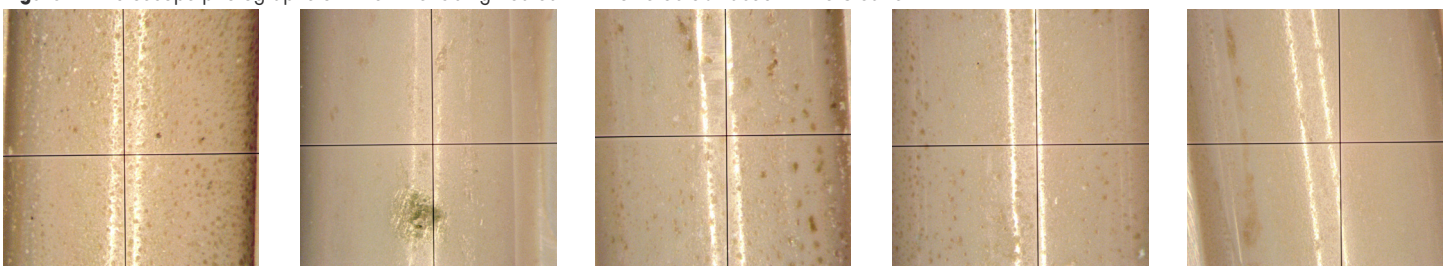


Figure 5. Microscope photographs of untreated (control) inner line tubing

Conclusion:

In clinical practice, evacuation lines need to be treated daily to support optimal suction and vacuum function. Utilizing an evacuation system cleaner that can reduce debris accumulation in the tubing of the lines can ensure proper maintenance is occurring, and can potentially save on maintenance costs down the line for the dental practice.

After visual and microscopic analyses of the inner tubings from the treated evacuation lines, it was found that treatment using ***Monarch CleanStream Evacuation System Cleaner*** resulted in the cleanest evacuation line tubing after 30 days of clinical use. The results of this investigation provide an insight for the potential results of long-term use in a clinical setting. Future testing could include long-term treatment to test this hypothesis.