

## Cleaning Efficacy of Monarch Enzymatic Cleaner Study

John A. Molinari, Ph.D., and Peri Nelson, B.S.

### Purpose:

The objective of the study was to investigate the cleaning capabilities of *Monarch Enzymatic Cleaner System* (Air Techniques, Inc.) when challenged with heavily soiled dental instruments.

### Experimental Design:

Representative dental instruments (30 dental scalers and 20 periodontal probes) were immersed in freshly prepared *Artificial Test Soil (ATS)* (Healthmark Industries Company, Inc.) mixed with sheep's blood (4:1 ratio). Coated instruments were dried in a 50°C oven for 1-2 hours to create a worst-case scenario (Figure 1). Test ultrasonic cleaner, *Monarch Enzymatic Ultrasonic Cleaner System* (Air Techniques), was prepared as per manufacturer's instructions in a representative ultrasonic unit (*Midmark 250*, Midmark). Contaminated dental instruments underwent a 10-minute cleaning cycle and then quickly rinsed with tap water. Triplicate tests were conducted. A visual inspection of each instrument was completed and recorded at the end of each cleaning cycle (n=3).

### Result:

When challenged with a worst-case scenario, *Monarch Enzymatic Ultrasonic Cleaner* was able to successfully remove organic debris from all instruments (Table 1 and Figure 2).

### Conclusion:

In this study we challenged *Monarch Enzymatic Ultrasonic Cleaner* with dental instruments heavily soiled with a mixture of Artificial Test Soil (Healthmark Industries Company, Inc.) and sheep's blood. ATS is used as a standardized test soil containing purified proteins (hemoglobin, albumin, amino acids, vitamins, and carbohydrates) that represent what would likely remain on medical instruments and devices. When the ultrasonic cleaner was tested with instruments coated with this commercial test soil, it was able to completely remove organic debris upon visible inspection.

Table 1.

Cleaner	# of Scalers with Debris	# of Probes with Debris
<b>Monarch</b>	0/90	0/60

Figure 1. Representative dental instruments heavily soiled with ATS/blood mixture.



Figure 2. Representative dental instruments cleaned with *Monarch Enzymatic Ultrasonic Cleaner*.

