

Cleaning Efficiency of Sani-Soak Ultra Enzymatic Cleaner System

Purpose: To investigate the cleaning capabilities of Sani-Soak Ultra Enzymatic Cleaner System (Enzyme Industries) when challenged with heavily soiled dental instruments.

Methods and Materials:

An Artificial Test Soil (ATS) (*Healthmark Industries Company, Inc.*) formulation was used as the primary organic load on instruments to challenge cleaning effectiveness of the ultrasonic solution. ATS has historically been shown to contain physiological components found in blood which are likely to remain on medical instruments and devices after clinical use. These include a mixture of purified bovine proteins (hemoglobin, albumin), amino acids, vitamins, and carbohydrates. Testing for removal of ATS during decontamination procedures of medical and dental devices and instruments has therefore been routinely used to provide a standard challenge for cleaning heat-stable items prior to sterilization. In the present study, the capabilities of the experimental ultrasonic solution was further challenged by adding whole blood and saliva (5:1:1 ATS: blood: saliva ratio) to the soil suspension prior to contamination of instruments. This modified ATS therefore provided an experimental “worst case” for removal of biological debris.

Representative dental instruments were chosen for evaluating the ability of **Sani-Soak Ultra Enzymatic Cleaner System** (*Enzyme Industries*) to remove dried organic debris in an ultrasonic unit (**Midmark 250**, *Midmark*). These included 30 dental scalers and 20 periodontal probes (*Hu-Friedy Mfg. Inc.*). Instruments were immersed and coated with the ATS/blood/saliva mixture and placed in a 50C oven for 1 hour, thereby allowing debris to harden on instrument surfaces (**Figure 1**). Groups of soiled instruments were placed in a basket and processed in a **Midmark 250** ultrasonic unit according to manufacturer's directions (**Figure 2**). Ultrasonic cleaning tests were conducted in triplicate. At the conclusion of each cleaning cycle, instruments were individually inspected for the presence of organic debris and the results tabulated.

Figure 1. Representative soiled instruments coated with ATS/whole blood mixture and test bacterial suspensions.

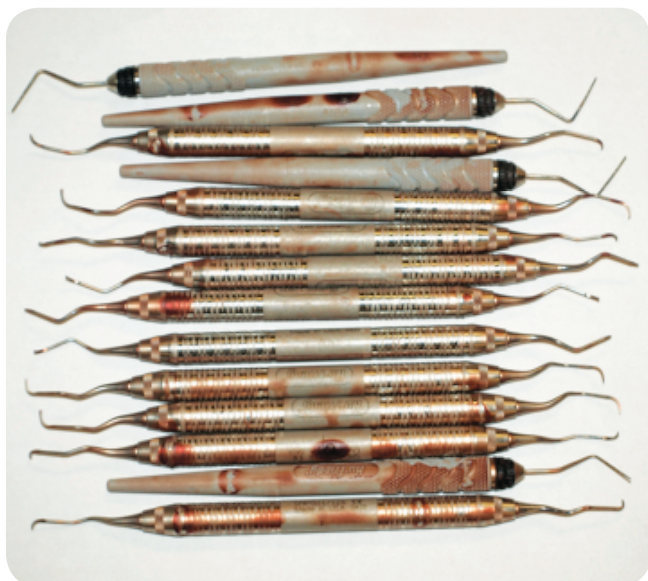
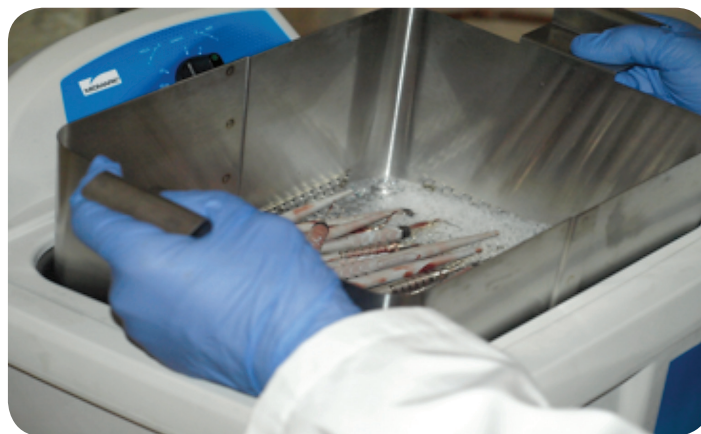


Figure 2. Placement of soiled instruments into the **Midmark 250** ultrasonic unit.



Results:

Excellent cleaning of contaminated instruments was noted after processing with *Sani-Soak Ultra Enzymatic Cleaner System*. The overwhelming majority (149/150) of soiled instruments showed no evidence of debris after a 10 minute ultrasonic cycle (*Figure 3; Table 1*). One probe was observed with a small discoloration at the end of the handle.

Figure 3. Representative instruments after ultrasonic cleaning with the *Sani-Soak Ultra Enzymatic Cleaner System*.



Table 1. Remaining organic soil after exposure to *Sani-Soak Ultra Enzymatic Cleaner System*.

Test Cycle	# Scalers with debris	# Probes with debris
1	0/30	1/20
2	0/30	0/20
3	0/30	0/20
Total	0/90	1/60

Summary

In the present investigation dental scalers and probes were heavily contaminated with organic soil prior to undergoing processing in an ultrasonic cleaner. The amount of challenge debris on instruments was far greater than what would be expected in clinical settings. After contaminated instruments were processed in an ultrasonic unit for 10 minutes, rinsed, and subsequently visually observed, it was found that *Sani-Soak Ultra Enzymatic Cleaner System* effectively removed the extensive dried material in >99% of soiled test samples.

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