

A new efficient method for cleaning, disinfecting and lubricating dental hand pieces (DHP)



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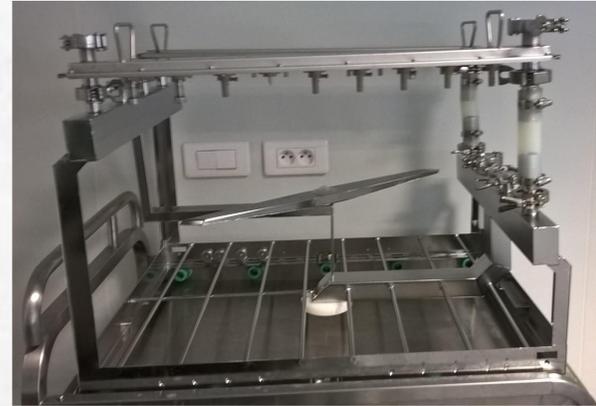
Introduction

The Central Sterile Supply Department (CSSD) will have to process 900 DHP a day.

Since the CSSD has got 10 washer-disinfectors (WD) Belimed WD290 not permanently occupied, the best option is to use them to process the 900 DHP.

So a new rack able to clean, disinfect and lubricate DHP inside as well as outside is tested in WD Belimed WD290. This new method complies with regulations on DHP (systematic sterilization) and providers recommendations (lubrication).

The test of this new rack is carried out from February to April 2016.



Aim

The current study is designed to evaluate the efficiency of DHP cleaning and drying while using the rack.

Material and methods

Trials are carried out in 2 validated WD Belimed WD290. To qualify the rack, DHP (handpieces, turbines and contra-angles handpieces) are collected either from prison dental units, dental consultations or maxillo-facial surgery.

Turbines finally cannot be tested in the WD Belimed WD290 because they require specific connectors (not available in the CSSD) to be fixed onto the rack.

In order to test both the inside and outside cleaning efficiency, the DHP are dirtied thanks to Soil-test® kit. Wet soiling (soil test drying time < 1hr) and dry soiling (soil test drying time > 10hr) are made.

A new WD cycle is set up. Neutral pH detergent disinfectant (Anios DLM Max® used at 0.4%) and a lubricant (Anios RL® used at 0.2%) adapted to DHP are used.

Step	Time (min)	Temperature (°C)
Cleaning	7	>50
Rinsing	2	>55
Thermal disinfection	>3	>93
Drying	22	>100

Table 1: Description of the different steps cycle

The rack is tested either fully or partially loaded.

Inner and outer cleanliness and inner and outer dryness are both evaluated. Outer dryness and outer cleanliness are visually appreciated. Inner dryness is analyzed by striking DHP onto a white absorbent pad. Inner cleanliness is controlled by using a lubrication spray through the DHP above the white pad.

Results are recorded using a scale which runs from satisfactory to not satisfactory.

	Not satisfactory	Satisfactory
Inner dryness	Water on absorbent pad after striking DHP	No water on absorbent pad after striking DHP
Outer dryness	Water running off DHP	No water running off DHP
Inner cleanliness	Dirty water projection while lubricating	No dirty water projection while lubricating
Outer cleanliness	Surface visibly soiled	No surface visibly soiled

Table 2: Chart used to assess cleaning and drying quality

Results / Discussion

	DHP	Drying		Cleanliness		Total
		Satisfactory	Not satisfactory	Satisfactory	Not satisfactory	
Wet soiled test	Contra-angles	18	58	76	0	76
	Handpieces	15	35	49	1	50
Dry soiled test	Handpieces	0	9	9	0	9

Table 3: Results

This rack allows an effective cleaning but the drying is not fully efficient.

No differences in efficiency of cleaning and drying between the rack partially loaded and the rack fully loaded are observed.

However the method used is limited. Indeed, this is a visual method and the results must be confirmed thanks to the residual proteins test.

Conclusion

This new rack opens a new way to process DHP in a validated WD.

It provides the required quality for cleaning and leads to improvement in handling capacity of DHP in the CSSD.

This rack may contain 36 DHP and the cycle lasts around 40 minutes, so the 900 DHP could be handled in less than 6 hours if 3 WD Belimed WD290 are used.

To go further, it shall be necessary to add another drying step with medical air after the cycle in the WD.