Effective processing of reusable dispensers for surface disinfection tissues – the devil is in the details

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Background
Surface disinfectant solution based on surface-active ingredients such as quaternary ammonium compounds, alkylamines or glucoprotam which are prepared in re-usable tissue dispensers may contaminate heavily with gram-negative bacterial species such as Achromobacter species 3, Achromobacter xylosoxidans and Serratia marcescens [1]. Bacterial cell counts were as high as 10^7 species 3, Achromobacter xylosoxidans and Serratia marcescens [1]. Bacterial cell counts were as high as 10^7. That is why effective cleaning seems a prerequisite for processing reusable dispensers for surface disinfectant tissues requires a thorough cleaning step with hot water or a biofilm-active cleaner, followed by rinsing, drying and disinfection. Effective automatic processing requires a temperature of 60°C to 70°C for at least 5 min with or without the use of a chemical cleaning agent. It becomes evident that processing of reusable dispensers for surface disinfectant tissues requires more effort than commonly thought if the real contamination found in clinical practice should be controlled and if the active ingredients of surface disinfectants are only surface-active substances.

Methods
All procedures were evaluated with at least 3 dispensers per procedure. Experiments were done with two types of dispensers.

Each experiment was done in the same way.

| “Contaminated clinic dispensers” | – dispensers from clinics that proved to be contaminated |
| New dispensers | 7 days | 14 days | 21 days | 28 days |
| 1 | 0 | 0 | 0 | 0 |
| 2 | 0 | 0 | 10^7 | 10^7 |
| 3 | 0 | 0 | 0 | 0 |
| 4* | 0 | 0 | 10^7 | 10^7 |
| 5* | 0 | 10^7 | 10^7 | 10^7 |
| 6* | 0 | 0 | 10^7 | 10^7 |

Findings

Discussion
Especially gram-negative bacteria are known to be able to adapt to surface-active ingredients [2, 3], and they may form biofilm [4]. That is why effective cleaning seems a major prerequisite for processing reusable dispensers for surface disinfection tissues

References

Manual processing as follows:
– cleaning with Bacillol AF (at least 30 s)
– rinsing, drying
– disinfection with Bacillol AF (at least 30 s)
– allow air dry

Manual processing as follows:
– rinse with hot water
– thorough cleaning using a wipe and a household cleaner
– rinse with hot water
– disinfection of all dried surfaces by wiping with Bacillol AF (at least 30 s)
– allow air dry

Manual processing as follows:
– cleaning with Bodedex forte (immersion of at least 10 min, thorough cleaning)
– rinsing, drying
– disinfection with Bacillol AF (at least 30 sec)
– allow air dry

Manual processing as follows:
– rinse with hot water
– cleaning and disinfection with 0.8 % Dismozon plus (thorough cleaning, immersion of at least 1 hour)
– rinse with hot water
– drying

Automatic processing (“programme for operating theatre shoes”)
– rinsing: 1 minute (warm water)
– cleaning: 5 minutes (63°C)
– rinsing: 1 minute (warm water)
– drying: 3 minutes (70°C)
– drying: 5 minutes (45°C – 52°C)

Data are shown for a thermal automatic procedure, other procedures with mild or alkaline cleaning agents revealed the same results.

Research for infection protection.
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