

Antimicrobial activity of a silver containing alginate wound dressing - Suprasorb A+Ag -

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Introduction:

The antimicrobial activity of an silver middle-releasing alginate wound dressing (1) against common wound pathogens was proven - Suprasorb[®] A+Ag compared to the alginate dressing without silver (Suprasorb[®] A, negative control) and a reference product (Aquacel[®] Ag, ConvaTec).

Material and Methods

All samples were put into 20 mL of PBS-puffer containing approx. 1.0×10^6 cfu/mL of the micro-organisms (challenge test). At defined time points the wound dressings were evaluated by plate count to determine the reduction of the number of the challenge micro-organisms by the dressing samples (2, 3).

Test organisms: *P. aeruginosa*, *E. coli*, *S. aureus*, *S. pyogenes*, *S. epidermidis*, *MRSA*, *MRSE* and *VRE*.

Purpose

Suprasorb[®] A+Ag showed excellent bactericidal* activities of at least 3 log-steps:

- against *P. aeruginosa* and *S. pyogenes*, reductions after 6h.
- against *E. coli*, *S. epidermidis* and the *MRSA* after 24 h.

In the case of the *S. aureus* and *MRSA* Suprasorb[®] A+Ag showed a higher antimicrobial activity compared to the reference product after 24 h. Against *S. epidermidis* the activity of Suprasorb[®] A + Ag and Aquacel Ag was higher than against the *MRSE* after 24 h. The bacteriostatic* activities was observed against *VRE* for both silver products after 48 h. The first antimicrobial effect of Suprasorb[®] A+Ag against *E. coli* after 6 h indicated a higher susceptibility of the test organism against this new silver alginate dressing compared to positive control.

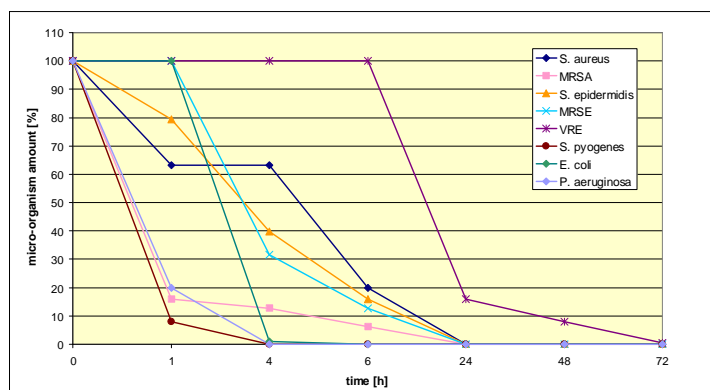
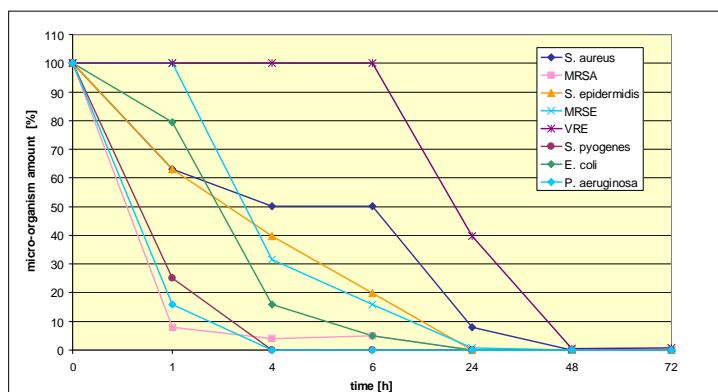


Fig. 1: Detectable micro-organism amount after exposure to silver-containing alginate wound dressing Suprasorb[®] A+Ag



log reduction factors [cfu/ml]								
Time	S. aureus	MRSA	S. epidermidis	MRSE	VRE	S. pyogenes	E. coli	P. aeruginosa
Suprasorb [®] A+Ag (L&R)								
0 h	0	0	0	0	0	0	0	0
1 h	0,2	0,8	0,1	0	0	1,1	0	0,7
4 h	0,2	0,9	0,4	0,5	0	3,4	2	5,4
6 h	0,7	1,2	0,8	0,9	0	5,3	3,6	6,6
24 h	3,2	4,1	4,4	3,5	0,8	6,5	5,8	6,6
48 h	5,9	4,8	5,4	5,5	1,1	6,6	5,8	6,6
72 h	5,2	5,6	5,4	5,5	2,4	6,5	5,8	6,6
Aquacel [®] Ag (ConvaTec)								
0 h	0	0	0	0	0	0	0	0
1 h	0,2	1,1	0,2	0	0	0,6	0,1	0,8
4 h	0,3	1,4	0,4	0,5	0	3,6	0,8	4,9
6 h	0,3	1,3	0,7	0,8	0	4,9	1,3	6,6
24 h	1,1	3,6	4,1	2,1	0,4	6,5	5,8	5,9
48 h	4,2	3,7	3,6	5,5	2,3	6,5	4,8	6,6
72 h	4,7	4,9	5,4	5,5	2,1	6,5	5,8	6,6

Tab. 1:

The antimicrobial activity (log reduction factors, cfu/ml) of the two silver containing samples against eight different micro-organisms throughout a period of three days.

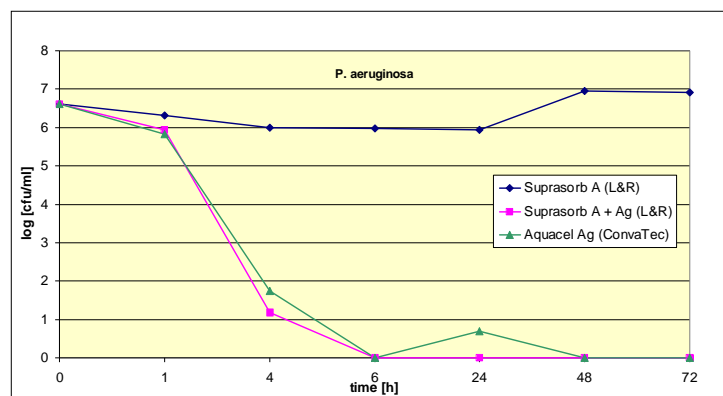


Fig. 3:

The antimicrobial efficacy of silver-containing wound dressings Suprasorb[®] A+Ag and Aquacel[®] Ag (positive control) in comparison to the Suprasorb[®] A (negative control) against *P. aeruginosa*.

Discussion:

In our *in vitro* studies the silver containing alginate dressing Suprasorb[®] A+Ag has demonstrated high antimicrobial activity against a wide variety of wound pathogens. Suprasorb[®] A+Ag with its bactericidal* effects was able to provide a sustained and efficacious dose of ionic silver within the liquid test suspension and presumably in surrounding moist wound environment.

References

1. Gorka M-Th, Data on file, FE BP 0205/2006
2. Rudolph P, Werner HP, Kramer A (2000): Untersuchungen zur Mikrobizidie von Wundauflagen. Hyg Med 2000; 25 (5): 184-186
3. Pitten FA, Werner HP, Kramer A (2003): A standardized test to assess the impact of different organic challenges on the antimicrobial activity of antiseptics. In: Journal of Hospital Infection. 55: 108-115

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Fig. 2:

Detectable micro-organism amount after exposure to silver-containing hydrofiber wound dressing Aquacel[®] Ag (positive control)