

Field test on curtains and drapes with antibacterial properties

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1. Introduction and project content

Sterilisation, disinfections and other supportive measures of the multi-barrier system act as vectors to the continuing spread of micro-organisms that can cause infections to break out. To these can be added the production of textiles such as curtains and drapes with a disinfecting function.

The principle applying is: the greater the quantity of agents, the higher the risk.

The aim was to establish whether, by reducing germs, curtains and drapes with antibacterial properties can be another sensible element in the multi-barrier system combating infection.

2. Carrying out trial in the clinic

2.1

Drapilux curtains and drapes were hung in 4 patient rooms (4 bed units).

Twice a week samples were taken using RODAC dishes.

In all rooms use was made of fabrics made from standard polyester materials and from Trevira CS Bioactive material.

It was not possible for either patients, care staff or laboratory personnel to recognise which of the curtains had antimicrobial properties.

2.2 Taking samples – places

The samples that were to be examined were taken directly from the curtain material.

2.3 Time and quantity of taking samples

Samples were always taken in the morning between 7.00 and 9.30 am.

4 rooms at 12 samples each (6 dishes "Bioactive " /6 dishes standard material)	= 48 samples
Samples taken twice weekly	= 96 samples
6 weeks x 96 samples	= 576 samples
standard material	= 288 samples
Trevira CS Bioactive	= 288 samples

2.4 Material for sample taking

The fabrics were shaken onto Agar plates with blood (RODAC process), which was used to determine the number of germs.

2.5 Processing in the laboratory

The petri dishes were labelled and incubated for 48 hours at 37° C. A count was made of the of the KBEs (colony forming units), while nosocomial infection agents (NIE) were determined on the basis of suspicion.

3. Contamination

3.1 Contamination of curtains / drapes in standard polyester

In total 288 samples were examined.
Contamination was on average 20.85 KBE / RODAC dish.
The number of nosocomial infection agents (NIE) was on average 0.83 KBE / dish.

standard polyester	KBE	
	NIE	
Staph. aureus	157	
Streptococci (suspicion)	65	
Klebsiella suspicion	15	
Aspergillus spp.	2	
Coagulase-negative staphylococci	1907	

3.2 Contamination of curtains / drapes in Trevira CS Bioactive.

In total 288 samples were examined.
 Contamination was on average 10.02 KBE / RODAC dish.
 The number of nosocomial infection agents (NIE) was on average 0.198 KBE / dish.

Trevira CS. Bioactive	KBE	
	NIE	
Staph. aureus	41	
Streptococci (suspicion)	1	
Klebsiella suspicion	0	
Aspergillus spp.	1	
Coagulase-negative staphylococci	804	

4. Results and conclusions

	standard polyester	Trevira CS Bioactive	difference
	KBE/NIE	KBE/NIE	%
Staph. aureus	157	41	-74.0
Streptococci (suspicion)	65	1	-98.4
Klebsiella suspicion	15	0	-100.0
Aspergillus spp.	2	1	-50.0

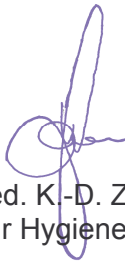
With the important nosocomial infection agents (NIE) a clear difference in contamination is revealed between the two fabrics in favour of the “bioactive” fibre.

Prior to this point in time there has not been clarity regarding the significance and necessity of changing drapes and curtains, and of the frequency of so doing.

There are no rules / regulations about this. Therefore it is particularly important to use materials that reduce the number of germs and especially those that are agents of nosocomial infections.

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Curtain materials and drapes made from Trevira CS Bioactive can be an important factor in the multi-barrier system employed and they can contribute towards avoiding the spread of nosocomial infection agents and of work-related infections in hospital staff.



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Appendix: Table

KBE / proven microorganisms 20 cm ²																	
2		Aerob. Sporen bildner	Micrococcus luteus	Koagulase-negative Staph.	Hyphomycet	Staph. aureus	Streptokokken (Verdacht)	Klebsiella (Verdacht)	As-Perigillus spp.		Aerob. Sporen bildner	Micrococcus luteus	Koagulase-negative Staph.	Hypomyzet	Staph. aureus	Streptokokken (Verdacht)	Aspergillus spp.
3	PCS	15	3	12						BIO	18	16	2				
4	PCS	22	1	21						BIO	19	8	7	4			
5	PCS	26	1	24	1					BIO	8	6	2				
6	PCS	12	1	4	7					BIO	11		5	6			
7	PCS	4		3	1					BIO	10	4	3	3			
8	PCS	8	1	3	4					BIO	15	1	9	5			
9	PCS	33	1	13	19					BIO	8	1	2	5			
10	PCS	20		4	16					BIO	20	9	7	3	1		
11	PCS	5		3	2					BIO	11		2	9			
12	PCS	9		3	6					BIO	5	1	1	3			
13	PCS	14	3	6	5					BIO	13	8	2	3			
14	PCS	45		24	21					BIO	21	2	8	11			
15	PCS	57	2	8	47					BIO	24		3	21			
16	PCS	4			4					BIO	10	1		9			
17	PCS	56	3	4	49					BIO	8	1	4	3			
18	PCS	26		15	11					BIO	19	1	9	9			
19	PCS	20	5	4	11					BIO	10	3	2	5			
20	PCS	18	3	6	9					BIO	15		2	13			
21	PCS	25	3	9	13					BIO	2			2			
22	PCS	36	2	25	9					BIO	10	9	1				
23	PCS	3		2	1					BIO	14	2	4	8			
24	PCS	7	1	2	3	1				BIO	7	2	2	3			
25	PCS	12	6	2		1	3			BIO	7	1		6			
26	PCS	15	1	3	11					BIO	11	2	3	6			
27	PCS	8	1	6	1					BIO	13	8	2	3			
28	PCS	5		2	3					BIO	8		4	4			
29	PCS	39	18	9	12					BIO	18	8	10				
30	PCS	41	2	17	22					BIO	12	9	1	2			
31	PCS	13		2	11					BIO	14	5	6	3			
32	PCS	8	3	2	3					BIO	13	3	2	8			
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35	PCS	3	2	1						BIO	17	4	7	3		3	
36	PCS	4	2	1				1		BIO	19		12	7			
37	PCS	19	2		17					BIO	11	10	1				
38	PCS	18	1	9	8					BIO	18	9	8	1			
39	PCS	8		5	3					BIO	11	3	5	3			
40	PCS	6	1	4	1					BIO	8		6	2			
41	PCS	15	2	8	5					BIO	13	4	4	5			
42	PCS	59	2	48	9					BIO	17	3	7	7			
43	PCS	8		3	5					BIO	7			5		2	

44	PC8	6			6				
45	PC8	5	3	1	1				
46	PC8	7	1	2	4				
47	PC8	23	1	3	19				
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51	PC8	4	1	1	1				1
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53	PC8	50	1		48				1
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57	PC8	5	1	3	1				
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59	PC8	1			1				
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62	PC8	14			14				
63	PC8	6	1		5				
64	PC8	19	1	3	15				
65	PC8	6	2	2	2				
66	PC8	41	5	19	17				
67	PC8	12	1	2	8	1			
68	PC8	10		4	6				
69	PC8	20	2	10	7	1			
70	PC8	16		10	6				
71	PC8	25		3	22				
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91	PC8	12	6	2	3			1	
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BIO	4	4							
BIO	9	2	2	5					
BIO	11	10	1						
BIO	8	1	4	3					
BIO	8	5	2	1					
BIO	4	2		2					
BIO	3	1	2						
BIO	9	4	4	1					
BIO	6	1	4	1					
BIO	9	8	1						
BIO	9	3	4	1	1				
BIO	9	3	6						
BIO	10	3	6	1					
BIO	22	11	9	2					
BIO	11	3	5	3					
BIO	10	9	1						
BIO	3	1	2						
BIO	7		3	3	1				
BIO	6	5	1						
BIO	11	2	5	4					
BIO	23	8	12	2	1				
BIO	15	10	3	2					
BIO	12	8	3	1					
BIO	9	2	2	5					
BIO	8		5	3					
BIO	11	8	1	1	1				
BIO	18	9	8				1		

268	PCS	23	6	14	3					
269	PCS	29	19	7	2		1			
270	PCS	11	9	2						
271	PCS	34	28	4	2					
272	PCS	21	15	5	1					
273	PCS	28	22	4	2					
274	PCS	8	3		5					
275	PCS	12	9	3						
276	PCS	5	4	1						
277	PCS	61	45	14	1		1			
278	PCS	11	6	5						
279	PCS	23	7	14	2					
280	PCS	11	4	4	3					
281	PCS	35	21	9	5					
282	PCS	34	18	9	6			1		
283	PCS	19	4	7	8					
284	PCS	23	8	11	4					
285	PCS	20	8	12						
286	PCS	11	5	5	1					
287	PCS	50	22	10	14		3	1		
288	PCS	33	13	9	6		5			
289	PCS	29	9	12	5		3			
290	PCS	9	6	2	1					
Summe	PCS	6005	1912	1928	1907	19	157	65	15	2

BIO	11	6	5							
BIO	9	6	1	2						
BIO	9	3	5	1						
BIO	7	3	3	1						
BIO	22	13	6	2		1				
BIO	4	2	1	1						
BIO	12	11	1							
BIO	9	5	1	3						
BIO	17	13		4						
BIO	12	6	2	4						
BIO	12	9	2	1						
BIO	3		2	1						
BIO	8		6	2						
BIO	9	3	4		2					
BIO	27	22	2	3						
BIO	12	12								
BIO	7	1	6							
BIO	8	5	3							
BIO	31	21	7	3						
BIO	5	4	1							
BIO	14	11	3							
BIO	8	3	5							
BIO	4	3	1							
BIO	2886	1004	1021	804	14	41	1	0	1	

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