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## Report - Antiviral Activity of textile product HEFM47.CO.01

**Tested by:** Prof. Uwe Rösler and Dr. Anika Friese

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### Tested textile product

- reference textile: Cotton (Co), untreated, 11.04.2020, lab number: C1
- antiviral textile: HEFM47.CO.01, 13.05.2020, LIVINGUARD, lab number: C2-neu

### Method

- modified according to ISO 18184 (First edition 2014-09-01)
  - washing of all tested textiles with deionized water 10 times at **40°C**, drying
  - cutting pieces of approximately 20x20mm and making up a mass of 0,4g with several pieces
  - sterilization at 121°C for 15 min, drying
  - before starting the test conditioning the textiles overnight in a humid environment (incubator 37°C)
  - controls: verification of cytotoxic effect and cell sensitivity to virus/inactivation of antiviral activity

- test: inoculation of 0,4g textile with 1ml (or 2ml) virus suspension (at least  $10^7$  TCID<sub>50</sub>/ml)
  - washing out using 19 ml (or 18 ml) cell culture medium (MEM Eagle EBSS + 10% fetal calf serum + 1% non-essential amino acids, +1 % penicillin (10.000 U/ml) / streptomycin (10 mg/ml)) after specific time points
  - titration of washing solution in 96-well plate and titer calculation with method of Spearman and Karber in TCID/ml
- comparison of titer from untreated textile (reference) and treated textile for the specific time points

## Results

Code ITU	C1	C2-neu	C1	C2-neu	C1	C2-neu	C1	C2-neu	C1	C2-neu	C1	C2-neu
sequential nr.	1	1	2	2	3	3	4	4	5*	5*	6*	6*
textile after <b>30 min</b> in log(10) TCID <sub>50</sub> /ml	7,6	6,35	7,6	6,6	7,35	6,35	7,35	6,475	7,35	7,1	7,475	6,975
Antiviral Activity after <b>30min</b> in log(10)		1,25		1		1		0,875		0,25		0,5
Reduction after <b>30min</b> in %		<b>94,38</b>		<b>90,00</b>		<b>90,00</b>		<b>86,66</b>		<b>43,77</b>		<b>68,38</b>
textile after <b>1h</b> in log(10) TCID <sub>50</sub> /ml	7,1	5,975	7,1	6,1	7,35	5,475	7,35	5,85	-	-	-	-
Antiviral Activity after <b>1h</b> in log(10)		1,125		1		1,875		1,5	-	-	-	-
reduction after <b>1h</b> in %		<b>92,50</b>		<b>90,00</b>		<b>98,67</b>		<b>96,84</b>	-	-	-	-
textile after <b>2h</b> in log(10) TCID <sub>50</sub> /ml	7,1	5,225	7,1	5,225	6,6	5,35	6,975	5,35	7,725	6,475	7,35	5,6
Antiviral Activity after <b>2h</b> in log(10)		1,875		1,875		1,25		1,625		1,25		1,75
reduction after <b>2h</b> in %		<b>98,67</b>		<b>98,67</b>		<b>94,38</b>		<b>97,63</b>		<b>94,38</b>		<b>98,22</b>
textile after <b>6h</b> in log(10) TCID <sub>50</sub> /ml	6,975	3,85	6,85	4,475	6,475	4,1	6,725	4,35	6,85	4,1	7,1	3,975
Antiviral Activity after <b>6h</b> in log(10)		3,125		2,375		2,375		2,375		2,75		3,125
reduction after <b>6h</b> in %		<b>99,93</b>		<b>99,58</b>		<b>99,58</b>		<b>99,58</b>		<b>99,82</b>		<b>99,93</b>
textile after <b>12h</b> in log(10) TCID <sub>50</sub> /ml	6,475	< 3,1	6,225	3,35	6,475	3,35	5,975	3,1	-	-	-	-
Antiviral Activity after <b>12h</b> in log(10)		>3,375		2,875		3,125		2,875	-	-	-	-
reduction after <b>12h</b> in %		<b>&gt;99,9</b>		<b>99,87</b>		<b>99,93</b>		<b>99,87</b>	-	-	-	-

\*inoculation with 2ml virus suspension instead of 1ml

## Conclusion

The treated textile sample "C2-neu" can efficiently inactivate SARS-CoV-2. The results show a reduction of infectious SARS-CoV-2 within 6 hours from 2.3 to 3.1 log-ranges in comparison to the untreated textile. This means a reduction rate up to 99.9% after 6 hours. As a result of the inoculation of 0.4 g textile with 1 ml virus suspension the whole textile was moistened. This allows the textile sample having the largest disinfectant effect, we assume. Therefore, especially the handling with moist masks seems to be safer in comparison to the untreated textile.

Berlin, 30.07.2020



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