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Microbiological Technical Services Laboratory Report

Hygiene Services & DCCL

Report No: 1148 FINAL

Issue Date:- 29 September 2011

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REPORT NO. 1148 **Date:** 29 September 2011 **FINAL**

SAMPLE FROM: Hygiene Services & DCCL

DATE OF RECEIPT: 15 August 2011

ACTION: Samples for evaluation UV effects on the antimicrobial protection of bioguard treated hospital curtains.

SAMPLES

A sample of Blue curtain untreated was received on 15 August.

ANTIMICROBIAL STUDIES

A portion of the blue untreated curtain was treated with Fantex by ISCA UK Ltd.

This treated curtain and the untreated curtain were evaluated for antimicrobial protection using the Modified Kirby-Bauer test protocols as detailed below.

The samples were placed in a QUV treatment cabinet for 1, 3, 7, 10, 14, 21 and 28 days.

Testing was carried out on sample swatches subjected to up to 7 days (Table 1) UV treatment and further testing from 7 to 28 days (Table 2).

QUV TREATED SWATCHES

The Fantex treated swatches showed a loss of integrity after 21 days in the QUV cabinet, this is not unexpected as there is no UV protective coating on the curtains. The treated swatches were still of sufficient integrity to allow microbiological testing.

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EVALUATION OF ANTIMICROBIAL PROTECTION

Modified Kirby-Bauer

The surface of suitable culture media, TSA for bacteria and SDA for fungi, were surface inoculated (using a sterile swab) with 0.5ml of the test species as detailed below. The inoculated plates were allowed to stand for 5 minutes to allow the inoculum to soak into the media, (with the lid closed). Duplicate swatches 25x 25 mm from the samples were transferred onto the surface of the inoculated culture media, The plates were then incubated 48 hours at 35°C for bacteria, 48 hours at 25°C for the yeast and 5 days at 25°C for mould.

TEST SPECIES

<i>Escherichia coli</i>	NCIMB 8879
<i>Staphylococcus aureus</i> MRSA	NCIMB 11939
<i>Clostridium difficile</i>	NCTC 11205
<i>Candida albicans</i>	NCPF 3179
<i>Aspergillus niger</i>	CMI 149007

TEST RESULTS

Table 1

SAMPLE	ASSESSMENT OF ANTIMICROBIAL PROTECTION				
	<i>E.coli</i>	MRSA	<i>C.difficile</i>	<i>C.albicans</i>	<i>A.niger</i>
Fantex – no UV	43 mm	35 mm	28 mm	30 mm	30 mm
Fantex – 1 day UV	46 mm	35 mm	28 mm	28 mm	27 mm
Fantex – 3 day UV	40 mm	33 mm	30 mm	28 mm	26 mm
Fantex – 7 day UV	39 mm	34 mm	27 mm	26 mm	0
Untreated	0	0	0	0	4

Table 2

SAMPLE	ASSESSMENT OF ANTIMICROBIAL PROTECTION				
	<i>E.coli</i>	MRSA	<i>C.difficile</i>	<i>C.albicans</i>	<i>A.niger</i>
Fantex – 10 day UV	34 mm	30 mm	0	0	3
Fantex – 14 day UV	34 mm	31 mm	0	0	4
Fantex – 21 day UV	36 mm	35 mm	0	0	4

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Fantex – 28 day UV	32 mm	30 mm	0	0	4
Untreated control	2	4	0	2	4

Assessment of growth

Size of clear zone of no growth in mm, to include 25 mm fabric swatch

Grade 0 = no clear zone – no growth under swatch

Grade 1 = <10% growth on swatch

Grade 2 = 10-30% growth on swatch

Grade 3 = >30% growth on swatch

Grade 4 = >60% growth on swatch

CONCLUSIONS AND OBSERVATIONS

Test results indicate:-

- The effect of the UV treatment had an effect on the integrity of the fabric. This was not unexpected as there is no UV treatment applied.
- The Fantex treated curtain demonstrated good protection of the treated swatches even after 28 days UV treatment. The effect against *A.niger* was less but this is in part due to the growth pattern of *A.niger* i.e. will overgrow the media with time.

Test results confirm the Fantex treated curtain showed good protection even after 28 days UV treatment in a QUV treatment cabinet.

It is generally accepted that 1 day in this cabinet is equivalent to 18 days shelf life which should indicate a shelf life for the curtains of 18 months.

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