

To Whom It May Concern,

3<sup>rd</sup> of September 2020

**CONSULTATION AND ANTIMICROBIAL EVALUATION: COATED PANELS OF SELF-CLEANING PRODUCT**

Project : Antibacterial properties of IGL coating plate

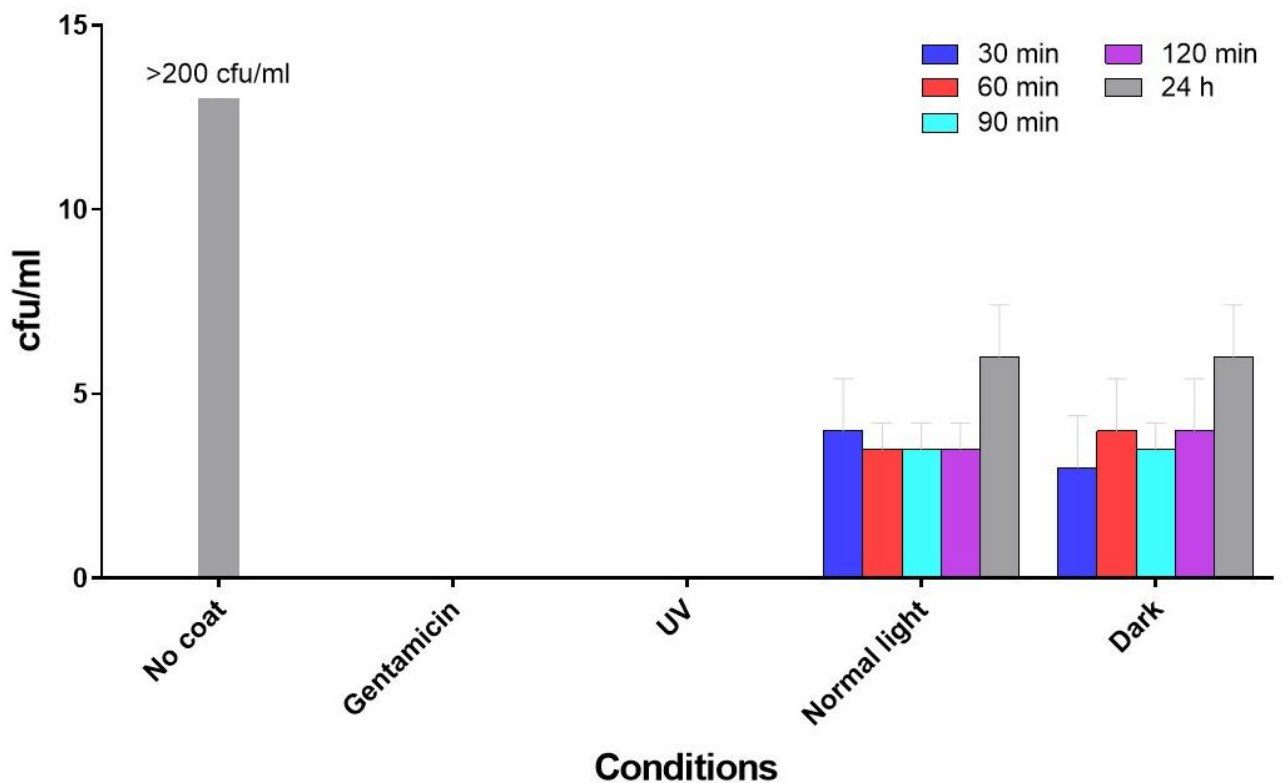
Test period : 19/8/2020 – 31/8/2020

PIC : Dr Norfaizah Mahmud / Dr Wan Abd Al Qadr Imad Wan Mohtar

*ALL plates have been autoclave (sterilized) prior the treatment*

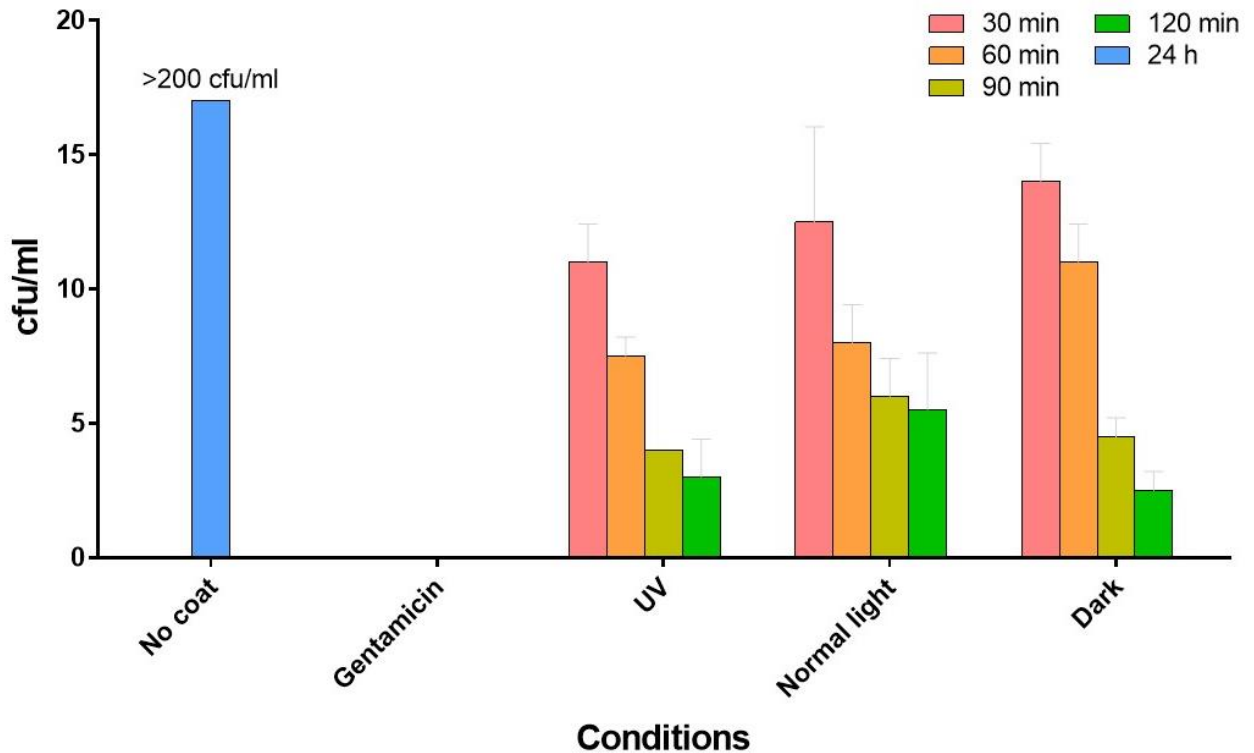
**Gram-positive bacteria results:**

***Bacillus subtilis***





### ***Staphylococcus aureus***



### **Gram-positive bacteria results: No inhibition**

Verdict:

- 1) The results showed that the antibacterial properties exhibited the best when the plates were exposed to the UV light, followed by normal light and lastly in the dark (UV light > normal light > dark).
- 2) The coating demonstrated different efficacy towards gram positive and gram negative bacteria. In this study, the coated plated in all conditions (UV exposure, normal light and dark) were able to inhibit total growth of gram negative (*E. coli* and *S. marcescens*). While, formation of bacterial colonies was observed when the coated plates were tested against gram positive (*B. subtilis* and *S. aureus*) bacteria.
- 3) Extensive antimicrobial assay with more bacteria strains should be done in the future to get more information

No. / G	Bacteria	Incubation period	Conditions		
			UV	Normal light	Dark
			cfu /ml		
1 / G+	<i>Bacillus subtilis</i>	30 min	0	4.0 ± 1.41	3.0 ± 1.41
		60 min	0	3.5 ± 0.71	4.0 ± 1.41
		90 min	0	3.5 ± 0.71	3.5 ± 0.71
		120 min	0	3.5 ± 0.71	4.0 ± 1.41
		24 h	0	6.0 ± 1.41	6.0 ± 1.41
		24 h (coat+Gentamicin+NB)	0	0	0
		24 h (coat+sdH <sub>2</sub> O+NB)	0	0	0
		24 h (uncoated+bacteria)	>200	>200	0
2 / G+	<i>Staphylococcus aureus</i>	30 min	11.0 ± 1.41	12.5 ± 3.54	14.0 ± 1.41
		60 min	7.5 ± 0.71	8.0 ± 1.41	11.0 ± 1.41
		90 min	4.0 ± 0.0	6.0 ± 1.41	4.5 ± 0.71
		120 min	3.0 ± 1.41	5.5 ± 2.12	2.5 ± 0.71
		24 h	0	0	0
		24 h (coat+Gentamicin+NB)	0	0	0
		24 h (coat+sdH <sub>2</sub> O+NB)	0	0	0
		24 h (uncoated+bacteria)	>200	>200	>200
3 / G-	<i>Escherichia coli</i>	30 min	0	0	0
		60 min	0	0	0
		90 min	0	0	0
		120 min	0	0	0
		24 h	0	0	0
		24 h (coat+Gentamicin+NB)	0	0	0
		24 h (coat+sdH <sub>2</sub> O+NB)	0	0	0
		24 h (uncoated+bacteria)	>200	>200	>200
4 / G-	<i>Serratia marcescens</i>	30 min	0	0	0
		60 min	0	0	0
		90 min	0	0	0
		120 min	0	0	0
		24 h	0	0	0
		24 h (coat+Gentamicin+NB)	0	0	0
		24 h (coat+sdH <sub>2</sub> O+NB)	0	0	0
		24 h (uncoated+bacteria)	>200	>200	>200

G+ = gram positive, G- = gram negative, cfu/ml = colony forming unit per ml, NB = Nutrient broth, sdh<sub>2</sub>O = sterile distilled, water

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