



Effects of Vancomycin Exposure on Fitness of Methicillin-Resistant *Staphylococcus aureus* (MRSA) Isolated from Klang Valley, Malaysia

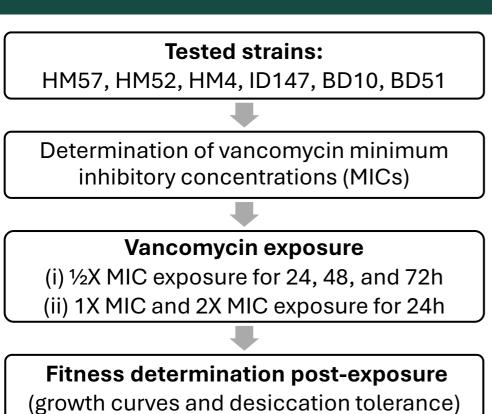
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Introduction

Vancomycin remains the first-line treatment for MRSA infections. Prolonged exposure to vancomycin may impose a fitness cost on MRSA, affecting its growth and stress tolerance. We investigated the effect of vancomycin exposure on the fitness (growth and desiccation tolerance) of representative MRSA strains circulating in Klang Valley, Malaysia, between December 2023 to May 2024.

Methods and Results



2) Growth curves

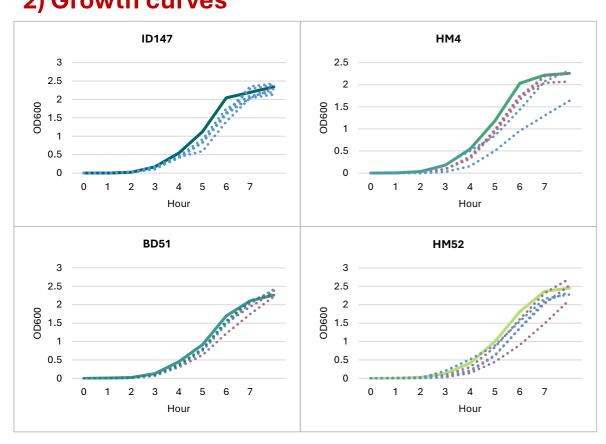


Figure 2. Slower growth of strains ID147, BD51, HM52, and HM4 post-vancomycin exposure (time: purple; concentration: blue).

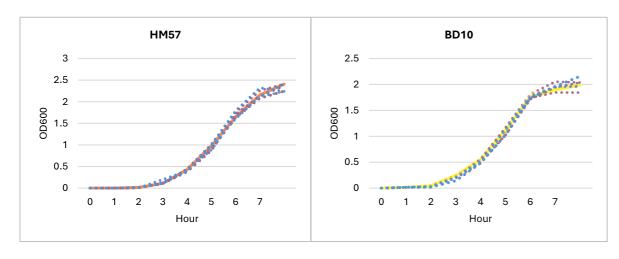


Figure 3. No noticeable growth changes in strains BD10 and HM57 post-vancomycin exposure (time: purple; concentration: yellow).

1) Vancomycin MICs and strain survival under vancomycin exposure: All strains had vancomycin MIC < 2 mg/L and survived sub-MIC exposure; ID147, BD10, and HM57 survived up to 2X MIC.

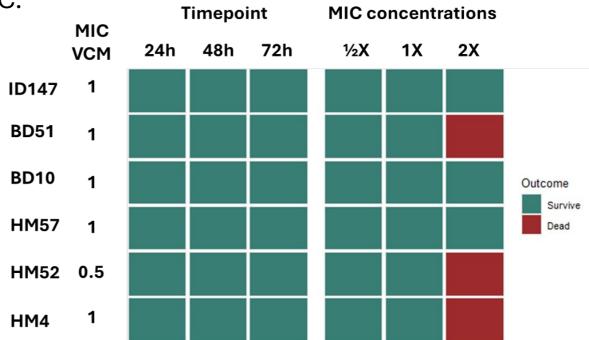


Figure 1. Vancomycin MICs and strains survival under vancomycin exposure.

3) Desiccation tolerance

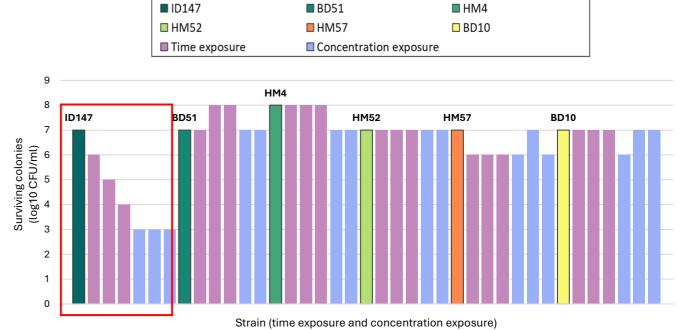


Figure 4. Desiccation tolerance mostly unaffected, except for ID147 with lower survival under time (purple) and concentration (blue) exposure.

Conclusion

Our preliminary findings showed that MRSA strains exhibited **different fitness response following vancomycin exposure**, potentially influenced by **strain background**. Further studies are needed to confirm these associations.

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Acknowledgement: Ministry of Higher Education TRGS/1/2022/UKM/02/8/1