ANTIBIOGRAM PROFILING OF ISOGENIC *IN VITRO*-INDUCED VANCOMYCIN INTERMEDIATE-SUSCEPTIBLE AND PARENT SUSCEPTIBLE *STAPHYLOCOCCUS AUREUS* STRAINS

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Abstract: *Staphylococcus aureus* with reduced vancomycin susceptibility has become of concern in clinical treatment of infections. The study examined antibiogram profiles of *in vitro* generated isogenic clinical vancomycin intermediate-susceptible *S. aureus* (VISA) strains (n = 40) and heterogeneous (with sub-populations of VISA) (hVISA) strains (n = 7) compared to their respective parent vancomycin-susceptible (VSSA) strains. The vancomycin susceptibility categories were classified according to their minimum inhibitory concentration (MIC) to vancomycin using an agar dilution method together with a population analysis profile/area under curve assay. Isogenic parent and descendent *S. aureus* pairs were verified by pulsed-field gel-electrophoresis amplicon size profiles. Using a disc diffusion assay and MIC measurement, 28% of VISA were shown to become more sensitive to 10/12 other antimicrobials tested, in particular against (≥ 2 dilutions) amoxicillin/clavulanate, cefuroxime, penicillin, and oxacillin, while 29% of hVISA were more susceptible, but at a lesser extent, to this set of antibiotics. Interestingly 3 hVISA and 11 VISA strains exhibited higher resistance to teicoplanin than their respective parent VSSA strains. This study indicates antibiogram profiles of clinical vancomycin less-sensitive *S. aureus* strains should lead to identification of alternative antibiotics and/or their combinations that could provide more successful treatment outcome.

Keywords: *Staphylococcus aureus,* antibiogram, vancomycin, Thailand

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