

Antimicrobial activities of plant extracts against methicillin-susceptible and methicillin-resistant *Staphylococcus aureus*

ABSTRACT

The present study was carried out to compare the antimicrobial activities of methanol leaf extracts of *Bauhinia purpurea*, *Dicranopteris linearis*, *Melastomamalabathricum* and *Muntingiacalabura* portrayed by different antimicrobial assays against methicillin-susceptible and methicillin-resistant *Staphylococcus aureus* strains. Antimicrobial activities of the methanol leaf extracts were preliminarily screened by disc diffusion. Minimum inhibition concentration (MIC) and minimum bactericidal concentration (MBC) were determined by broth microdilution and colorimetric assay (resazurin). Based on disc diffusion method, *S. aureus* ATCC®700699™ (MRSA) elucidated higher susceptibility pattern against all plant extracts compared to *S. aureus* ATCC®25923™ (MSSA). Taking results from all employed assays into consideration, *M. calaburam* methanol leaf extract comparably elicited the highest antimicrobial activity than the other methanol leaf extracts against both microorganisms. The MIC values were determined by colorimetric assay (resazurin) due to pigmentations of the methanol leaf extracts that obscured visual growth turbidity inspection. Complication in colour changes observation in colorimetric assay to determine MBC was overcome by employing the conventional plating method. This study suggested that all antimicrobial assays should be carried out concurrently so as the data obtained can be comparatively analysed for a better outcome as each antimicrobial assay has its own shortfall.

Keyword: Antimicrobial activities; Disc diffusion; Broth microdilution; Colorimetric assay; *Bauhinia purpurea*; *Dicranopteris linearis*; *Melastomamalabathricum*; *Muntingiacalabura*; *Staphylococcus aureus*