

Anti-Methicillin-Resistant Staphylococcus aureus (MRSA) Compounds from Bauhinia kockiana Korth and Their Mechanism of Antibacterial Activity

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Abstract : Bauhinia kockiana originates from Peninsular Malaysia, and it is grown as a garden ornamental plant. However, it is used as medicinal plant by Malaysia 'Kelabit' ethnic group in treating various diseases and illnesses. This study focused on the assessment of the antibacterial activity of B. kockiana towards MRSA, to purify and identify the antibacterial compounds, and to determine the mechanism of antibacterial activity. Antibacterial activity of B. kockiana flower is evaluated qualitatively and quantitatively using disc diffusion assay and microbroth dilution method to determine the minimum inhibitory concentration (MIC) and minimum bactericidal concentration (MBC) of extracts. Phytochemical analysis is performed to determine the classes of phytochemicals in the extracts. Bioactivity-guided isolation is performed to purify the antibacterial agents and identified the chemical structures via various spectroscopy methods. Scanning electron microscopy (SEM) technique is adopted to evaluate the antibacterial mechanism of extract and compounds isolated. B. kockiana flower is found to exhibit fairly strong antibacterial activity towards both strains of MRSA bacteria. Gallic acid and its ester derivatives are purified from ethyl acetate extract and the antibacterial activity is evaluated. SEM has revealed the mechanism of the extracts and compounds isolated.

Keywords : alkyl gallates, Bauhinia kockiana, MRSA, scanning electron microscopy

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