

In Vitro Antibacterial Activity of Some Medicinal Plants Against Biofilm-Forming Methicillin-Resistant Staphylococcus aureus

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Abstract : Introduction: The prevalence of methicillin-resistant Staphylococcus aureus (MRSA) has been slowly rising in Nigeria for the past few decades. Therefore, novel classes of antibiotics are indispensable to combat the increased incidence of newly emerging multidrug-resistant bacteria like MRSA. Plants have been commonly used in popular medicine of most cultures for the treatment of disease. The in vitro antibacterial activity of some Nigerian common medicinal plants used in traditional medicine has been reported. The aim of this study was to investigate the antibacterial and anti-biofilm of these native plants (Entada abyssinica (leaves), Croton macrostachyus (leaves), Bridelia speciosa (seeds, bark), and Aframomum melegueta (leaves, seeds, and stem) collected in Southwestern Nigeria against a panel of seven biofilm-forming MRSA. Methods: Minimum inhibitory concentrations (MIC) and minimum bactericidal concentrations (MBC) of the plant extracts against MRSA were determined by the broth dilution method, and the anti-biofilm assay of the most potent plant extract was performed. Result: The results revealed that, of the four plants, water extracts of leaves of Entada abyssinica, leaves of Croton macrostachyus, seeds and bark Bridelia speciosa, and seeds of Aframomum melegueta exhibited significant antibacterial activity. Based on the MIC/MBC ratio, the extracts of these plants were determined to be bacteriostatic in nature. Anti-biofilm assay showed that the extract of seeds of Aframomum melegueta and leaves of Croton macrostachyus fairly inhibited the growth of MRSA in the preformed biofilm matrix. Conclusion: These four medicinal plant species may represent a source of alternative drugs derived from plant extracts based on folklore use and ethnobotanical knowledge from southwest Nigeria.

Keywords : extract, MRSA, antibacterial, biofilm, medicinal plants

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