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***In-vitro* Antimicrobial Activity of *Thespesia populnea* (L.) against Clinical Isolates of Methicillin-Resistant *Staphylococcus aureus* (MRSA)**Kumari R.M.D.S.S.^{1#}, Weerasinghe N.P.², Attanayake A.³, Piyasiri A.⁴¹Department of Medical Laboratory Sciences, Faculty of Allied Health Sciences,
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Background: Methicillin-resistant *Staphylococcus aureus* (MRSA) is a common and aetiological agent of many infections which is amenable to treatment with many antibiotics.

Objectives: To determine *in-vitro* antibacterial activity of different solvent extracts of leaf of *Thespesia populnea* (L.) against MRSA.

Methods: Aqueous, ethanol, and acetone leaf extracts of *T. populnea* were tested against ten clinical isolates of MRSA. Disc diffusion method was performed using each plant extract (3 mg/mL, 30 mg/mL, and 300 mg/mL) impregnated discs in triplicates. The broth microdilution method was performed using two-fold dilutions of the plant extracts (aqueous-300 mg/mL, ethanol-30 mg/mL, and acetone-6.5 mg/mL). Vancomycin (2 µg/mL) and 20% DMSO were used as positive and negative controls respectively for broth methods. Mean value of the lowest concentrations which didn't show turbidity was taken as MIC and mean value of the lowest concentrations which did not show growth on blood agar was taken as MBC.

Results: In disk diffusion method, the ethanol extracts at 300 mg/mL, and 30 mg/mL showed range of zone diameters (mean±SD) as 12.46 (±0.54) - 9.09 (±0.90) mm and 10.47 (±0.62) - 7.73 (±0.57) mm, respectively against all tested isolates. The acetone extracts at 300 mg/mL, 30 mg/mL and 3 mg/mL demonstrated zone diameters of 13.41 (±0.59) - 10.09 (±0.97) mm, 11.13 (±0.07) - 9.06 (±0.35) and 10.43 (±0.62) - 7.41 (±1.54) mm, respectively. The ethanol extract at 3 mg/mL was efficacious against three isolates of MRSA [zone diameters were in the range of 8.07 (±0.70) - 6.40 (±0.52) mm]. Inhibitory zones were not shown by the aqueous extract at the 300 mg/mL, 30 mg/mL, 3 mg/mL against any clinical isolate of MRSA. The acetone extract had a MIC range of 0.10 - 0.75 mg/mL, MBC range of 0.10 - 0.75 mg/mL indicating better antimicrobial activity than the aqueous extract (MIC: 150 - 300 mg/mL, MBC: 300 mg/mL) and ethanol extracts (MIC: 0.47 - 15.00 mg/mL, MBC: 0.47 - 15 mg/mL) for all 10 MRSA isolates.

Conclusions: Ethanolic and acetone extracts of the leaf of *T. populnea* demonstrated antimicrobial activity against MRSA. The acetone extract had the lowest MIC against all tested clinical isolates of MRSA.

Keywords: Antimicrobial activity, Methicillin resistance *Staphylococcus aureus*, Minimum bactericidal concentrations, Minimum inhibitory concentrations, *T. populnea*