

**Minor Research Project**  
On  
**Pharmacological Evaluation of Indigenous Plants for Antimicrobial Activity  
against Selected Human Pathogen**

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**Executive Summary**

The invitro antibacterial activity of various solvents and water extract of *orthosiphon*, *Thevetia*, *Ipomoea*, *Pergularia daemia*, *Morinda*, *Pedilanthus*, *Aegle* and *Costus* was assed on 10 drug resistance clinical isolates from both Gram positive and gram negative bacteria and two standard strains including *Staphylococcus aureus* and *Escherichia coli*. The zone of inhibition as determined by agar well diffusion method varied with the plants extract, the solvents used for extraction and the organism tested. *Klebsiella*, *E. coli* and *Staphylococcus aureus* were resistance to the plants extract tested. Moreover, water extract did not restrain the growth of the tested bacteria. Ethanol and methanol extracts were found to be more potent being capable of exerting significant inhibitory activities against the majority of bacteria investigated. *Staphylococcus aureus* was the, most inhibited bacterial isolate with 24 extracts (60%) inhibiting its growth whereas the *E.coli* exhibited strong resistance being inhibited by only 11 extract (28%). The results obtained in the agar gel diffusion plates were in fair correlation with that obtained in the minimum inhibitory

concentration tests. The minimum inhibitory concentration of Orthosiphon, Pedilanthus, Thevetia and Aegle extracts was found in the range of 1.56-6.25 mg/ml for the multi-drug resistant *Staphylococcus aureus* isolates tested whereas higher values (6.25-25 mg/ml) were obtained against the multi-drug resistant isolates *Klebsiella pneumonia* and *Escherichia Coli*.

Qualitative phytochemical analysis demonstrated the presence of tannins and saponins in all plants tested. Thin layer chromatography and bio autography agar overlay assay of ethanol extracts of Thevetia, Orthosiphon and Pedilanthus indicated flavonoids and tannins as major active compounds against methicillin-resistant *Staphylococcus aureus*.

Results of phytochemical analysis revealed the presence of saponins and tannins either in both methanol and ethanol extracts or in any of them. Reducing sugar and terpenoids were detected in both methanol and ethanol extracts of six plants. It was observed that flavonoids was positive in both extracts of four plants while found to occur in only methanol extracts of aloe Orthosiphon and Thevetia. It is well known that these phyto constituents have already exhibited antimicrobial activity.

From the above study, it can be concluded that, the selected medicinal plants have great potential as antimicrobial agents against MDR clinical isolates. Furthermore, in a few cases these plant extracts were active against MDR bacteria under very low concentrations thus minimizing the possible toxic effects. Hence, this

study would lead to the development of some stable, biologically active compounds which can be employed in the formulation of antimicrobial agents.