Comparative Antibacterial Activities of *Clerodendrum serratum* and *Premna herbacea* Roots

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***Clerodendrum serratum* and *Premna herbacea* are two sources of the plant-drug *Sirutekku* used in Siddha medicine. When the ethanol extracts of roots of these two plants were tested on two gram-positive and six gram-negative bacterial strains, the former exhibited highly significant activity against *Streptococcus pyogenes*-A and *Proteus mirabilis*, while the latter showed mild inhibition against *Staphylococcus aureus* and *Pseudomonas aeruginosa*. These results support our claim that *C.serratum* can be equated to *Sirutekku*.**

In Siddha system of medicine, two plants of the family Verbenaceae, *Clerodendrum serratum* and *Premna herbacea* are being used under the name *Sirutekku*[1]. *Sirutekku* is used in the formulation of not less than ten preparations and by itself has a variety of medicinal properties which include treatment of sore throat, respiratory disorders, cuts and wounds[2]. In this study, the ethanolic crude extracts of the roots of both the plants were tested for their antibacterial potential.

The roots of *C. serratum* were collected from Kolli hills (Namakkal district, Tamil Nadu) while those of *P. herbacea* were procured from the crude drug market of Thiruvananthapuram, Kerala. Both the materials were identified in the Survey of Medicinal Plants Unit, CCRAS, Tirunelveli, Tamil Nadu and the voucher specimens were deposited in the herbarium of the Faculty of Pharmaceutical Sciences, Madras Medical College. Authentic bacterial strains isolated from the clinical samples, maintained and supplied by the Department of Microbiology, Dr.ALM Post-Graduate Institute of Basic Medical Sciences, University of Madras, Taramani, Chennai were used in the study.

Shade dried and coarsely powdered roots (2.25 kg each) were extracted exhaustively with ethanol at room temperature (3x72 h). The solvents were decanted, distilled-off over boiling water-bath and concentrated *in vacuo* to get the ethanolic crude extracts of *C.serratum* (CS) and *P. herbacea* (PH) (yields: 149.6 g and 173.4 g, dry weight basis). On preliminary phytochemical screening, CS showed the presence of steroids, terpenoids, flavonoids, sugars and glycosides while PH had steroids, terpenoids, quinones and phenolic compounds.

Preliminary antibacterial screening of CS and PH with two gram-positive and six gram-negative bacteria was carried out with a maximum concentration of 500 µg/ml in 5% DMSO to find out susceptible organism. Bacteria were individually inoculated into the media containing CS or PH. The concentration of each organism in the inoculum was adjusted to 10^5-10^6 organisms per ml. The inoculated media were incubated at 37° for a period of 3 d. Growth of the bacteria in the medium containing CS or PH was compared with extract-free medium. By serial dilution technique, lower concentrations of CS or PH were prepared and the MIC values of susceptible organisms were determined[3] and compared with standard antibiotics ampicillin and tetracycline.

Preliminary screening with CS and PH showed that the former completely inhibited the growth of two strains, *Streptococcus pyogenes*–A and *Proteus mirabilis* while the latter had moderate activity against *Staphylococcus aureus* and *Pseudomonas aeruginosa*. The MIC value of CS against *S.*

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TABLE 1: ANTIBACTERIAL ACTIVITIES OF *C.SERRATUM* (CS) AND *P.HERBACEA* (PH) ROOT EXTRACTS

Organisms	CS	PH	Standards	
			Ampicillin	Tetracycline
Streptococcus pyogenes-A	1.91	-	1.26	3.42
Proteus mirabilis	3.90	-	2.52	3.91
Staphylococcus aureus	-	4.01	1.26	0.63
Pseudomonas aeruginosa	-	7.81	2.52	3.91

[a]MIC values in μg/ml.

pyogenes-A was comparable to that of ampicillin and lower than that of tetracycline, whereas against *P. mirabilis* the extract's activity was comparable to that of tetracycline and lower than that of ampicillin, thus revealing a potent antibacterial activity for CS against the above two organisms (Table 1).

Though PH inhibited the growth of *S. aureus* and *P. aeruginosa*, the MIC values against the above strains were much lower compared to either ampicillin or tetracycline, indicating a lesser activity. Earlier studies on the ethanolic root extracts of *C. serratum* and *P. herbacea* have shown that the former possesses the biological activities ascribed to *Sirutekku* in Siddha literature[2]. The present investigation has further revealed that it has significant antibacterial activity also.

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Phytochemical And Pharmacological Studies on The Roots of *Capparis Sepiaria*

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The objective of the present study was to investigate the phytochemical constituents and pharmacological properties of the roots of *Capparis sepiairia* of genus Capparis. The roots powder was extracted with petroleum ether, methanol and water. Chemical constituents were isolated from petroleum ether extract and methanol extract using column chromatography, which were further studied by spectroscopic methods. In pharmacological evaluation, all these extracts showed significant anti-inflammatory and analyses activities.

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