

## *In vitro* evaluation of antibacterial activity of leaf extracts

■ P. GOPAL REDDY, PRAJAKTA TATHE AND K.J. SALUNKE

### SUMMARY

Leaves of *Lantana camara* L., *Clematis gouriana* Roxb., *Tridax procumbens* L., *Tephrosia purpurea* Pers. and *Piper betle* L. extracted in aqueous and ethanol medium were evaluated for their effect on the growth of *Staphylococcus aureus*, *Escherichia coli*, *Klebsiella pneumoniae*, *Pseudomonas aeruginosa* and *Salmonella typhimurium*. Extract of *C. gouriana* was found to have no antibacterial effect. The aqueous and ethanol extract of only *L. camara* could show the inhibitory activity on bacteria. Ethanol extract was more effective than aqueous extract. *P. aeruginosa* and *S. typhimurium* was found to be resistant to all plant extracts except *P. betle*. There was no effect of *P. betle* extract on *E. coli*.

**Key Words :** Leaf extracts, Bacteria, Effect, Inhibition

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Plants represent a rich source for biologically active compounds having potential to inhibit the growth of multi-drug resistant bacteria. A number of higher plants as source for new drugs are still largely unexplored. Only a small percentage of plant species has been investigated phytochemically and the fraction submitted to biological or pharmacological screening is even smaller. The major classes of plant compounds that exhibit antimicrobial activity are phenolics, terpenoids and essential oils, alkaloids, lectines and polypeptides and polyacetylenes (Cowan, 1999).

Recently, exploitation of wild plants for medicinal purposes has gained more acceptances in many countries of the world. The antimicrobial agents in plants have enormous therapeutic potential and can form the base for the development of new medicines (Trease and Evans, 1972). All plant parts are good source of antibacterial compounds (Dorman and Deans, 2000). Goyal *et al.* (2008) reported greater antibacterial activity in leaves of *Catharanthus roseus* than

in other parts of plant.

A number of workers (Naqvi *et al.*, 1991; Gislene *et al.*, 2000; Srivastava and Bohra, 2005; Nair and Chandra, 2007; Nair *et al.*, 2005; Pareikh *et al.*, 2005; Negi and Sharma, 2010) have investigated the antibacterial activity of the extracts of plant parts. Indiscriminate use of synthetic antimicrobial drugs leads to the development of resistance in microorganisms. Therefore, search for alternative drugs from natural sources is needed to counter the resistant microorganisms.

Thus, in the present investigation, leaves of five plants viz., *Lantana camara* L., *Clematis gouriana* Roxb., *Tridax procumbens* L., *Tephrosia purpurea* Pers. and *Piper betle* L. were extracted in water and ethanol and tested *in vitro* for their antibacterial effect on one gram positive bacterium *Staphylococcus aureus* and four gram negative bacteria *Escherichia coli*, *Klebsiella pneumoniae*, *Pseudomonas aeruginosa* and *Salmonella typhimurium*.

### MEMBERS OF THE RESEARCH FORUM

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### MATERIALS AND METHODS

The leaves of the plants collected from the Kalsubai regions of Western Ghats were washed under running tap water and surface sterilized by 0.1% w/v HgCl<sub>2</sub>, followed by rinsing twice in distilled water so as to remove the traces of HgCl<sub>2</sub>. These leaves were then dried in shade at room temperature, homogenized to fine powder and stored in airtight bottles.