



ANTIBACTERIAL ACITIVITY OF METHANOLIC EXTRACT OF ROOTS OF *TECOMA STANS*

T. RAMESH, V. ANUSHA and A. RAVI KUMAR*

Department of Pharmacognosy, Bapatla College of Pharmacy, BAPATLA - 522 101 (A.P.) INDIA

ABSTRACT

Methanolic extract of roots of *Tecoma stans* (family Bignoniaceae) was analyzed for antibacterial activity against four clinical isolates. Results against the selected microorganism *Psuedomonas aeruginosa*, show that the zone of inhibition was moderately higher than the other three selected microorganisms.

Key words : Plant extract, Antibacterial activity, *Tecoma stans*.

INTRODUCTION

Tecoma stans belongs to kingdom plantae, division magnoliophyta, class magnoliopsida, subclass Asteridae, family Bignoniaceae and genus Tecoma. *Tecoma stans* is a perennial shrub having sharply-toothed lance shaped green leaves and bears large showy bright golden yellow trumpet shaped flowers. The plant produces pods containing yellow seeds with papery wings. *Tecoma stans* fruits and flowers are reported to contain new compounds phenlyethanoids isoacetoside, diosmetin. The extract of the plant is reported to exhibit cytotoxic effect on human carcinoma cells and are potent inhibitors of human breast carcinoma cells. The plant is also reported as antioxidant and antiproliferative agent. *Tecoma stans* leaf extract is reported to possess antispasmodic without involvement of adrenoreceptors, opioid receptors and potassium channels. Calcium channels are involved in spasmolytic effect. *Tecoma stans* methanolic extract of leaf and stem bark is reported to be effective against *Candida albicans*. Preliminary phytochemical screening of the plant is reported to contain tannins flavanoids alkaloids quinines and traces of saponins.

* Author for correspondence

EXPERIMENTAL

Plant material and preparation of extract

Tecoma stans species of family Bignoniaceae was collected from Bapatla College of Pharmacy campus, Bapatla, A.P. (Medicinal plants garden) and it was authenticated. The air dried plant material was ground into powder in a mill. The crude dried powder was separately extracted with methanol; concentrated to small bulk under reduced pressure at 50°C. It was suspended in water and the pH of the water was adjusted to neutral.

Test for microorganisms

Four clinical strains were used in the study methicillin- resistant *Staphylococcus aureus* multi drug resistant *Pseudomonas aeruginosa* (i.e resistant to ampicillin, cefuroxime, cefotaxime, gentamicin, amikacin, erythromycin, clindamycin, ofloxacin, nalidixic acid, norfloxacin, ciprofloxacin and amoxicillin clavulanic acid *Staphylococcus epidermidis* and *Klebsilla pneumonia*. A standard ciprofloxacin solution 2 µg/mL was also tested.

Antibacterial activity

Antibacterial activity was determined by the Agar cup plate method. Petriplates containing 20 mL of nutrient agar medium (pH 7.2-7.4) were seeded with a 24h culture of the bacterial strains. Wells 8 mm diameter was cut into the agar and 50 µL of the plant extracts were tested in a concentration of 100 mg/mL, which were dissolved in DMSO. The inoculum size was adjusted so as to deliver a final inoculum of approximately 10⁸ colony forming units (CFU/mL). Incubation was performed at 37°C for 24h. Assessment of antibacterial activity was based on measurement of diameter of inhibition zone formed around the well.

RESULTS AND DISCUSSION

The results of antibacterial activity of the methanolic extract of root of *Tecoma stans* are given in Table 1. The maximum zone of inhibition (23 mm) was observed in 225 µg/mL concentration against *Pseudomonas aeruginosa*. The minimum zone of inhibition (16 mm) was observed in 75 µg/mL concentration against *Staphylococcus epidermidis*.

Table 1. Antibacterial activity of methanolic extract of roots of *Tecoma stans* on different bacteria

Treatment	Concentration µg/mL	Zone of inhibition (mm)			
		<i>S. Aureus</i>	<i>S. Epidermidis</i>	<i>P. Aeruginosa</i>	<i>K. Pneumoniae</i>
Standard Ciprofloxacin	2	29	30	30	30
<i>Tecoma stans</i> root methonolic extract	75	17	16	18	17
	150	20	19	20	19
	225	21	20	23	22

ACKNOWLEDGEMENTS

The authors are thankful to Management and Principal, Bapatla College of Pharmacy for providing necessary facilities for this project work.

REFERENCES

1. M. Marzook, A. Gamal-Eldeen, M. Mohamed and M. Elsayed, Antiproliferative and Antioxidant Constituents from *Tecoma stans*, Natuforsch., **61c**, 783 (2006).
2. M. K. Gharib Naseri, M. Asadi Moghaddam and S. Bahodoram, Antispasmodic Effect of *Tecoma stans* (L). Juss Leaf extract on Rat ileum, DARU, **15(3)**, 123 (2007).
3. O. A. Binuto and B. A. Lajubutu Antimicrobial Potentials of Some Plant Species of the Bignoniaceae Family, Afr. J. Med. Sci., **23(3)**, 269 (1994).
4. Kavanagh Analytical Microbiology, Scientific Book Agency, Kolkata (1963) p. 72.
5. M. M. Cowan, Plant Products as Antimicrobial Agents, Clinic. Microbial. Rev., **12**, 564 (1999).

Accepted : 26.02.2008