INTERNATIONAL JOURNAL OF ADVANCES IN PHARMACY, BIOLOGY AND CHEMISTRY

Review Article

Comparitive Study on Antibacterial Activities of *Clerodendron infortunatum Linn and Clerodendron paniculatum linn Root Extract*

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ABSTRACT

The root portions of the Clerodendron infortunatum Linn and Clerodendron paniculatum linn roots extracted with ethanol by cold maceration process .The extracts were vaccum dried and subjected to antibacterial (Staphylococcus aureus, Bacillus subtilis, Escherichia coli and Klebsiella pneumoniae) screening by Agar disc diffusion method. Minimum Inhibitory Concentration of microbial growth was also evaluated. The phytochemical screening as performed and different phytoconstituents present in the extracts were identified .The extract exhibited potent activity against Staphylococcus aureus, Bacillus subtilis, Escherichia coli and Klebsiella pneumoniae. The study reveals that Clerodendron paniculatum possess better antibacterial activity than the other species.

Keywords: Clerodendron infortunatum Linn & Clerodendron paniculatum linn roots, Antibacterial activity.

INTRODUCTION

Clerodendron infortunatum Linn,Clerodendron paniculatum Linn (Family :Verbenaceae)[1] was a species found in India, In this reported as folk remedy for tumours , leprosy, fever, infection, inflammation.The roots have been reported to possess laxative, diuretic, analgesic, anti inflammatory, anti tumour and antibacterial activities[2]. To our knowledge there were no scientific reports on the antibacterial activities of Clerodendron infortunatum Linn ,Clerodendron paniculatum Linn root. In

the present study the root portions of *Clerodendron infortunatum Linn,Clerodendron paniculatum* Linn was extracted with ethanol, by cold extraction.

The vaccum dried extracts (25, 50 and 100mcg/mL) were screened for antibacterial activities[3,4]. Minimum Inhibitory Concentration was also determined[5].

EXPERIMENTAL METHODS

Plant material and Extraction

The plants *C.infortunatum C.paniculatum* was collected from Pathanamthitta district of Kerala and identified by Thomas Mathew, HOD of Botany, Marthoma College Tiruvalla, Kerala. Voucher no. VSCI-13,VSCP14 were deposited in the Pharmacognosy department, Pushpagiri College of pharmacy, Tiruvalla. The root portion of the plants were washed with running water to remove soil and other matter and dried in shade for 20 days, powdered, extracted 500gm with ethanol (EECI) by cold extraction to yield the respective extracts. The extracts were reduced to molten mass by rotary vaccum evaporator and the yield was 18%, 21% respectively.

Preliminary phytochemical screening was performed as per standard procedure and various phytochemical constituents were identified[6,7].

Antibacterial activity

The extracts (EECI,EECP) were subjected to antibacterial (Staphylococcus aureus, Bacillus subtilis, Escherichia coli and Klebsiella pneumoniae) screening .The antibacterial screening was done by Agar diffusion method using a paper disc[3,4].

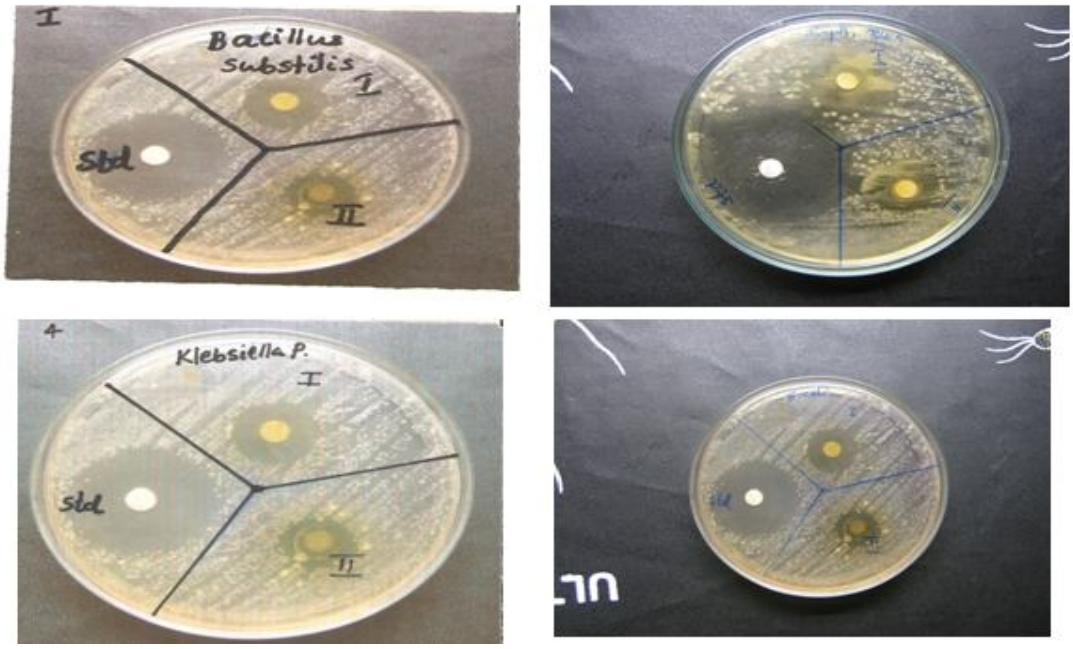
Nutrient agar and Saubraud dextrose agar media were used forantibacterial screening. The sterilized (autoclaved at 120˚ for 30 mins) medium (40˚- 45˚) was inoculated (1mL /100mL of medium) with suspension of the micro organism (match with McFarland barium sulphate standard). The paper impregnated with the extracts (25,50,100mcg/Ml in dimethyl sulphoxide) was placed on the solidified medium .The plates were pre inoculated for 1 h at room temperature and incubated at 37˚C for 24 and 48h for antibacterial activity determination. Ciprofloxacin (5mcg/disc) was used as standard for antibacterial activity. The observed zones of inhibition are presented in table 1 and fig no 1.The MIC for the above organism was found by Agar streak dilution method[5]. About 20ml of the media containing concentrations of the extracts was poured into each sterile petridish and allowed to solidify Microorganisms were then streaked one by one on the agar plate asceptically. After streaking all the plates were incubated at 37˚C for 24 h .Then the plates were observed for the growth of micro organisms.

The lowest concentration of the plant extracts required for inhibiting the growth was considered as the MIC of the extracts against bacterial strains. The MIC values of each extract against the tested micro organism were vide Table1.

Table 1: **Zone of Inhibition (in mm) and Minimum Inhibitory Concentration (MIC) of Clerodendron infortunatum Linn, Clerodendron paniculatum Linn root extract**

ORGANISM	EXTRACT	STANDARD {Ciprofloxacin) (5mcg/disc)} in mm	25mcg	50mcg	100mcg	MIC
Bacillus subtilis Strain no. NCIM-2067	EECI	24	16	18	20	20
	EECP	28	18	20	22	19
Staphylococcus aureus Strain no. NCIM-2079	EECI	46	16	21	30	21
	EECP	46	16	20	26	21
Escherichia coli Strain no. NCIM-2065	EECI	33	16	18	20	20
	EECP	33	15	18	21	21
Klebsiella pneumoniae Strain no. NCIM-2070	EECI	36	16	18	23	20
	EECP	36	17	19	23	21

EECI: Ethanol extract of *Clerodendron infortunatum Linn* root,
EECP Ethanol extract of *Clerodendron paniculatum Linn root.*



Zone of inhibition measured in mm

RESULT AND DISCUSSION

The preliminary phytochemical screening carried out on *Clerodendron infortunatum Linn*, *Clerodendron paniculatum Linn* root indicated the presence of carbohydrates, starch, mucilage, saponins, flavanoids, tannins, phenolic compounds in the ethanol extract .The antibacterial activities of the extracts were determined by measuring the zone of inhibition produced by the extracts against various tested organisms at different concentration. All the extracts exhibited marked activities against the tested organisms. E.coli and K.pneumonia, Staphylococcus aureus were more sensitive towards the extract at 100mcg indicated by a greater degree of inhibition on comparison with standard. All the organisms exhibited moderate activity against the extract as evident from Table1.From the aboves it is evident that the drug *Clerodendron paniculatum Linn* possess a better antibacterial drug with a minimum of adverseeffects.

CONCLUSION

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ACKNOWLEDGEMENT

Management and all staffs of Karpagam University for providing the all informations. Management of Pushpagiri group of institutions, Tiruvalla for providing the necessary facilities needed for the research.

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