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Antimicrobial activity evaluation of *Cleome viscose* linn.

Dhanalakshmi[1*], D. Sathis Kumar[2], M. Sravan Prasad[3], Venkateshwarlu Koli[4], B. Pawan kumar[5]and A. Harani[2]

[1]HITS, Bogaram, Ghatkesar, R.R.Dist., Andhra Pradesh, India
[2]Nalanda College of Pharmacy, Nalgonda, Andhra Pradesh, India
[3]GBN Institute College of Pharmacy, Ghatkesar, RR District, Andhra Pradesh, India
[4]Venkateshwara Institute of Pharmaceutical Sciences, Nalgonda, Andhra Pradesh, India
[5]Guru nanak institute of pharmacy, Ibrahimpatnam, R.R. Dist, India

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ABSTRACT

The study was aimed at investigating the antimicrobial screening of methanolic extracts of Cleome viscose against pathogenic bacteria and fungi responsible for common infections. The present investigation may be concluded that the plant C. viscoas is endowed with significant antimicrobial due to the presence active constituents, there by justifying its use in the indigenous system of medicine.

Keywords: cleome viscose, antibacterial, antifungal.

INTRODUCTION

Medicinal plants have curative properties due to the presence of various complex chemical substances of different composition, which are found as secondary metabolites in one or more parts of the plants [1]. Cleome viscosa linn (syn. C. icosandra) is a common weed belonging to family Capparidaceae and finds use in traditional system of Indian medicine. It is used as rubefacient, vesicant, and sudorific. The plant is also useful in skin diseases, itching, ulcers, leprosy, and malaria. Leaves favour digestion and dispel intestinal fermentation. Seeds are anthelmintic, detergent and carminative [2]. The presence of two flavanone glycosides such as Naringenin-4'-galactoside and dihydrokaempferol-4'-xyloside were confirmed by the phytochemical investigation of the roots [3]. Investigation of the seeds resulted cleomiscosin A, cleomiscosin D, 7 – phenoxycoumarin and Cleosandrin [4]. Cleomiscosins were exhibited liver-protective and antitumor activity[5]. The present investigation was carried out with reference to its antimicrobial activity.

MATERIALS AND METHODS

Methanolic extracts of C. viscosa were screened for antimicrobial activity done by cup plate method [6]. The activity was compared with standard (ampicillin for bacteria and Nystatin for fungi) and control 0.1% methanol in propylene glycol. Various organisms used in the study are Gram +ve bacteria (Bacillus subtilis and Staphylococcus aureus), Gram –ve bacteria (Escherichia coli and Pseudomonas aeruginosa) and Fungi (Aspergillus niger and Candida albicans). Different concentrations of extracts equivalent to 10, 50 and 100mg/ml were prepared by using 0.1% methanol in propylene glycol. 10 µg/ml concentrations of ampicillin and nystatin was prepared individually and used as standards to be studied along with test solutions and studied for their zone of inhibition individually. Nutrient agar and potato dextrose agar were used to study the antibacterial and antifungal activity of the extracts. The zone of inhibition around the cup indicates the antimicrobial activity. The control was run simultaneously to assess the activity of 0.1% methanol in propylene glycol which was used as vehicle for extracts. The study was performed in duplicate. The diameter of the zone of inhibition was measured and recorded.

RESULTS AND DISCUSSION

In the present study antimicrobial activity of 10 µg/ml concentrations of ampicillin and nystatin was also performed. The Zone of inhibition of ampicillin against Bacillus subtilis, Staphylococcus aureus, Escherichia coli and Pseudomonas aeruginosa were 22, 30, 32 and 30mm respectively. The Zone of inhibition of nystatin against Aspergillus niger and Candida albicans were 12mm. Antimicrobial potential of different concentration of methanolic extracts of the plant were present in the table 1.

Table 1: Effect of methanolic extracts of Cleome viscose and standard drugs on Pathogenic organism

Test organism	Zone of inhibition (mm)					
	Control	Ampicillin	Nystatin	Methanolic extracts		
		10µg/ml	10µg/ml	10mg/ml	50mg/ml	100mg/ml
Bacillus subtilis	9	22	-	12	14	17
Staphylococcus aureus	9	30	-	10	12	14
Escherichia coli	9	32	-	12	14	16
Pseudomonas aeruginosa	9	30	-	10	11	14
Aspergillus niger	9	-	12	9	10	11
Candida albicans	9	-	12	9	9	12

100mg/ml concentrated methanolic extracts were more effective than other concentrated extracts in the entire microorganism. The results show that all the test organisms were inhibited significantly by methanolic extracts as compared to the control. Due to the presence of 0.1% methanol in propylene glycol, Control showing 9mm zone of inhibition. To find out the exact inhibition of methanolic extract and standard drugs, control value has to substrate from the obtained zone of inhibition. The results showed that methanolic extract is more active against microorganism in a dose dependent manner.

CONCLUSION

It may be concluded that the plant C. viscosa is endowed with significant antimicrobial due to the presence active constituents, there by justifying its use in the indigenous system of medicine.

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