WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 5.045
Volume 4, Issue 1, 1331-1335. Research Article ISSN 2277– 7105

MICROBIOLOGICAL STUDY ON *BAUHINIA BLAKEANA* FLOWER EXTRACTS

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Article Received on
02 Nov 2014,

Revised on 27 Nov 2014,
Accepted on 22 Dec 2014

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ABSTRACT

The present study was to evaluate the antimicrobial activity of ethyl acetate extracts of *Bauhinia blakeana* (Family-Fabaceae) flowers against selected gram positive and gram negative microbes. The extracts were obtained by continuous hot percolation method and Antimicrobial activity was tested by Agar well diffusion method. The previous phytochemical screening showed the presence of secondary metabolites such as flavonoids, terpenoids, saponins, phenols and tannins. This Antimicrobial investigation revealed the extracts of the flower showing high Antimicrobial activity against the selected microbes. On account of this investigation we concluded that the secondary metabolites of *Bauhinia blakeana* might be the cause for their Antimicrobial potential.

KEYWORDS: *Bauhinia blakeana*, hot percolation method, antimicrobial activity, microbes, Agar well diffusion method.

INTRODUCTION

About 80,000 species of plants are utilized for treating various diseases in different systems of Indian medicine. Since 1990s there has been a growing shift in interest towards plants as significant sources for new pharmaceuticals. As per the world health organization (WHO) report 80% of the world population, presently use herbal medicine for some aspects of primary health care.[1] The urgent needs of new antimicrobials were increased tremendously due to the increase of side effects and resistivity of human pathogen against the

antimicrobials. Antimicrobials of plant origin have enormous therapeutic potential. They are effective in the treatment of infectious diseases while simultaneously mitigating many of the side effects that are often associated with synthetic antimicrobials.[2]

Bauhinia blakeana (Family: Fabaceae) is an evergreen 'Hong Kong Orchid' tree commonly found in India. The previous phytochemical investigation of ethyl acetate extracts revealed the presence of various phytoconstituents. There was no report about antimicrobial activity of flower extract of this plant. Hence, in the present study the ethyl acetate extracts of *Bauhinia blakeana* flowers were evaluated for their antimicrobial activity.

MATERIAL AND METHODS

Collection and identification of Plant material

The fresh flowers of *Bauhinia blakeana* were collected from Cholan Nagar, Tiruchirappalli District, Tamilnadu State, India and authenticated by State Horticulture Farm, Mudhalaipatti (Village), Trichy Karur Road, Karur (District), Tamilnadu. The flowers were thoroughly washed, dried under shade and pulverized.

Solvents used for Extraction

Ethyl acetate was used for the extraction.

Preparation of Flower Extracts

The extract was successively prepared by hot continuous percolation method using Soxhlet apparatus.[3] It was concentrated by using a rotary vaccum evaporator and subjected to dryness to yield crude residue. This residue was used for Antimicrobial screening. The details of soxhlet extraction were given in Table-1.

Table1. Details of Soxhlet Extraction of flowers of *Bauhinia blakeana.*

Weight of Plant Material	Solvents used	Volume of the Solvent	Sample-Solvent ratio (W/V)	Weight of residue	% yield
50g	Ethyl acetate	500mL	1:10	3.672g	7.34

Microbrial Strain

The microbial strains were collected from the Biotechnology Laboratory of Bishop Heber College, Tiruchirappalli (Ref. No.:BHC-BT-CTS02/2014/NMC) as pure cultures and used for the evaluation. The gram-positive and gram-negative bacterias namely *E.coli*, *Proteus sp.*,

Enterobacter sp. and *Klebsiella sp.* were taken for the test and they were cultured on Nutrient Agar (Hi Media) Slants at 4˚C.

Standard Antibiotic

Streptomycin (100µg/mL) was used as a reference standard against the pathogens.

Antibacterial Assay

The antibacterial activity assay of flower extracts was performed by agar well diffusion method. 20mL of sterile muller Hinton agar (Hi Media) was poured in sterile Petri dishes. The plates were allowed to solidify and used. 10mL of sterilized Muller Hinton agar medium (Seed Agar) was seeded with organisms (about 0.2mL according to 0.5 McFarland's standard), in semi hot conditions and was poured uniformly on the base agar. 8mm bores were made each equal distance from one another on the medium using sterile borer and 100µL of different urine preparation were added to respective bore. The plates were incubated at 37°C for 24 hrs and zone of inhibition were measured. For each test, three replicates were performed. Here an attempt was made to compare the antibacterial efficiency of flower extracts along with activity of standard antibiotic.

RESULT AND DISCUSSION

The results of Antimicrobial activity of flower extracts of *Bauhinia blakeana* are furnished in Table-2.

Table 2. Result of Zone of inhibition of Antibacterial activity of flower extracts of *Bauhinia blakeana.*

S.No.	Name of the bacteria	Mean Zone of Inhibition (diameter) in mm
		Ethyl acetate Extract
1	*E.coli*	30
2	*Proteus sp.*	45
3	*Enterobacter sp.*	40
4	*Klebsiella sp.*	35

The ethyl acetate extracts of *Bauhinia blakeana* flowers were exhibited different degrees of antibacterial activity against the selected microbes. The maximum antibacterial potential of ethyl acetate extracts of *Bauhinia blakeana* against *Proteus sp.*was 45mm while the minimum zone of inhibition exhibited against *E.coli* was 30mm. The photographs of the result of Antibacterial potential of ethyl acetate extracts are presented in Fig 1.

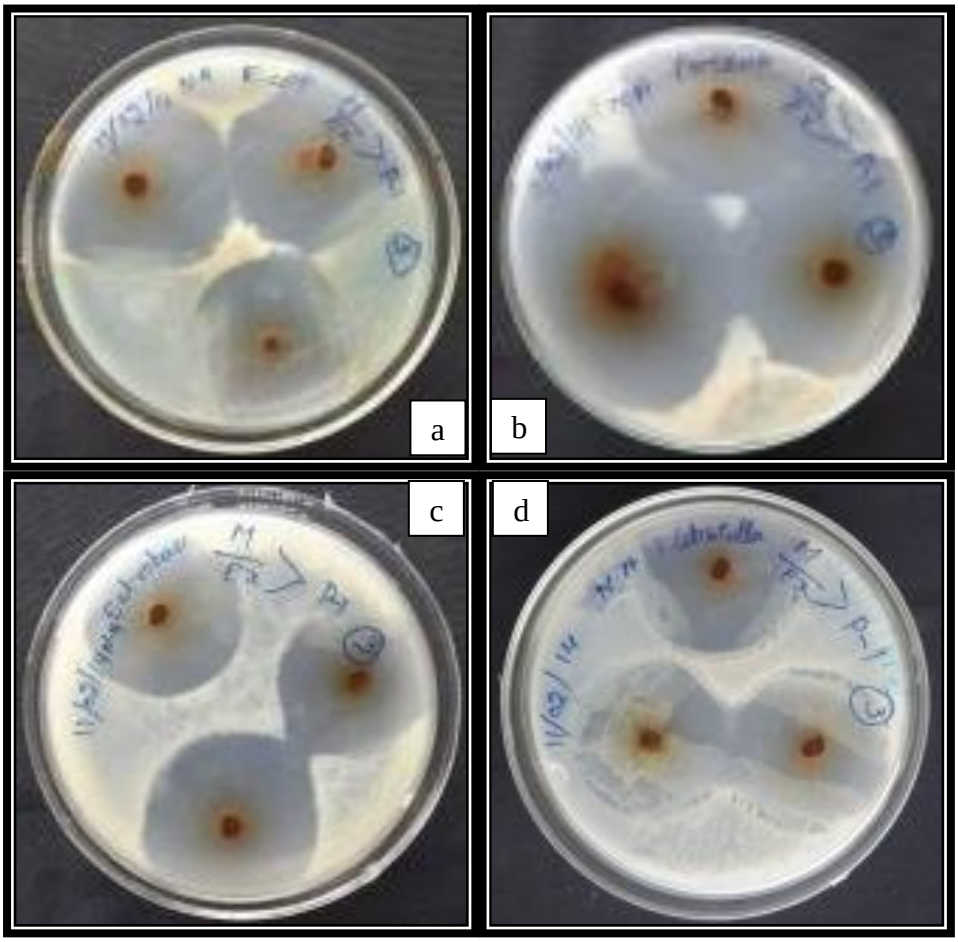

Fig 1: Photograph of a dish showing zone of inhibition of ethyl acetate extracts against the organisms (a) *E.coli,* (b) *Proteus sp.,* (c) *Enterobacter sp.,* and (d) *Klebsiella sp.*

The results revealed that the extracts are potent antimicrobials against the test organism. The antibacterial activity was observed from the zone of inhibition. The preliminary evaluation emphasizes further research to describe the bioactive compounds involved for their antimicrobial activity and to evaluate their other pharmacological activities of the plant.

CONCLUSION

In this evaluation, we concluded that the ethyl acetate extracts of the *Bauhinia blakeana* flowers showed significant antimicrobial potential against the gram-positive and gram-negative bacterias by Agar well diffusion method.

ACKNOWLEDGEMENT

The Authors would wish to acknowledge the Management and Principal of Nehru Memorial College for providing research facilities and encouragement.

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