

Efficacy of *Bauhinia Blakeana* against Selected Microbes

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Abstract: The plants from Fabaceae family are having significant potential against various microbes. In the present study, the microbiological investigation was carried out on the flowers of *Bauhinia blakeana* based on the previously reported quantitative investigation. The Agar well diffusion method was performed in order to find the antimicrobial potential of the flowers of *Bauhinia blakeana*. This microbiological investigation revealed the flowers of *Bauhinia blakeana* potent 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*, quantitative investigation, microbiological, microbes, Agar well diffusion method.

1. 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 blakaena (Family: Fabaceae) is an evergreen 'Hong Kong Orchid' tree commonly found in India. There was no report about the antimicrobial activity of flower extract of this plant. Hence, in the present study the methanolic extracts of *Bauhinia blakaena* flowers were taken for evaluation.

2. Experimental Methods

2.1 Collection and identification of Plant material

The fresh flowers of *Bauhinia blakaena* 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.

2.2 Solvents used for extraction

Methanol was used for the extraction.

2.3 Preparation of Flower Extracts

The hot continuous percolation method was performed in order to prepare the methanol extract using soxhlet extractor [3]. It was concentrated by using a rotary vacuum evaporator and subjected to dryness to yield crude residue. This residue was used for the investigation. The details of soxhlet extraction were given in Table-1.

Table 1: Details of Soxhlet Extraction of flowers of *Bauhinia blakaena*

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

2.4 Microbial 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.

2.5 Standard Antibiotic

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

2.6 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 100 μ L 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.

3. Results and Discussion

The results of microbiological investigation 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 in mm
1	<i>E.coli</i>	30
2	<i>Proteus sp.</i>	45
3	<i>Enterobacter sp.</i>	40
4	<i>Klebsiella sp.</i>	35

The methanolic extracts of *Bauhinia blakeana* flowers were exhibited different degrees of antibacterial activity against the selected microbes. The maximum antibacterial potential against *Proteus sp.* was 45mm while the minimum zone of inhibition exhibited against *E.coli* was 30mm. The photographs showed the inhibition zone of *Bauhinia blakeana* against selected microbes are presented in Figure 1. The results revealed that the extracts are highly potent against the test organisms. The investigation emphasizes further research to evaluate their other pharmacological activities of the plant.

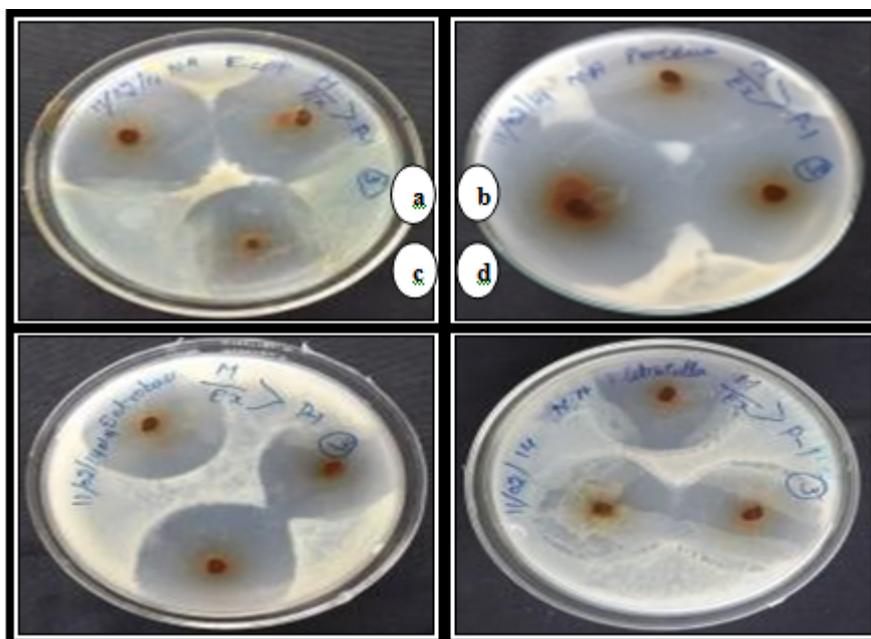


Figure 1

4. Conclusions

In this investigation, it has been concluded that the methanolic extracts of the *Bauhinia blakeana* flowers showed significant antimicrobial potential against the selected microbes which confirmed by Agar well diffusion method.

5. Future Scope

This evaluation emphasizes further research on *Bauhinia blakeana* to isolate and characterize the bioactive compounds involved for their antimicrobial activity.

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