

Research Article

Evaluation of Antimicrobial Effect of Bauhinia Blakeana Flowers

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ABSTRACT

This study was to evaluate the antimicrobial activity of petroleum ether extract of *Bauhinia blakeana* (Family-Fabaceae) flowers against selected microbes and it was obtained by continuous hot percolation method: Antimicrobial activity was evaluated by Agar well diffusion method. This investigation revealed the petroleum ether extract showing significant Antimicrobial activity against the selected microbes. Hence, we can conclude that the flower extract of *Bauhinia blakeana* was possessing Antimicrobial potential.

Keywords: *Bauhinia blakeana*, hot percolation method, petroleum ether, antimicrobial potential, microbes, Agar well diffusion method.

INTRODUCTION

Pathogenic bacteria constitute a major cause of morbidity and mortality in humans. The emergence and spread of bacterial resistance has made the treatment of infectious diseases more problematic. In this context, resistance in Gram negative bacteria presents a major challenge for the antimicrobial therapy and significantly narrows the treatment options of human infections. [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] Medicinal plants are the 'back bone' of traditional remedy. [3] Plants contain many biologically active molecules with different medicinal properties. [4], [5] India is very rich in natural resources and the knowledge of traditional medicine and the use of plants as source of new drugs is an innate and very important component of healthcare system. [6]

Bauhinia blakaena (Family: Fabaceae) is an evergreen 'Hong Kong Orchid' tree commonly found in India. The previous phytochemical investigation of flower extracts of the plant revealed the presence of alkaloids, flavonoids, terpenoids, saponins, phenols and tannins. There was no report about antimicrobial activity of flower extract of this plant. Hence, in the present study the flower extracts of *Bauhinia blakaena* were evaluated for their antimicrobial activity.

MATERIAL AND METHODS

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.

Preparation of Flower Extracts: The Petroleum ether (30°-60° C) extract was successively prepared by hot continuous percolation method and concentrated. Then it was subjected to dryness to yield crude residue. This residue was used for Antimicrobial study. The detail of soxhlet extraction was given in Table I.

Microbial strain: The pure microbial strains cultures were collected from the Biotechnology Laboratory of Bishop Heber College, Tiruchirappalli (Ref. No.:BHC-BT-CTS02/2014/NMC) 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. 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.

Table 1: Details of Soxhlet Extraction of Plant (Flower)

| Weight of Plant Material | Solvent | Volume of the Solvent | Sample-Solvent ratio (W/V) | Weight residue | % yield |
|--------------------------|-----------------|-----------------------|----------------------------|----------------|---------|
| 50g | Petroleum ether | 500mL | 1:10 | 1.435g | 2.87 |

Table 2: Result of Zone of inhibition of Antibacterial activity of petroleum ether extract of *Bauhinia blakeana* flowers

| S.No. | Name of the bacteria | Mean Zone of Inhibition in mm Petroleum Ether Extract |
|-------|-------------------------|---|
| 1 | <i>E.coli</i> | 50 |
| 2 | <i>Proteus sp.</i> | 48 |
| 3 | <i>Enterobacter sp.</i> | 45 |
| 4 | <i>Klebsiella sp.</i> | 51 |

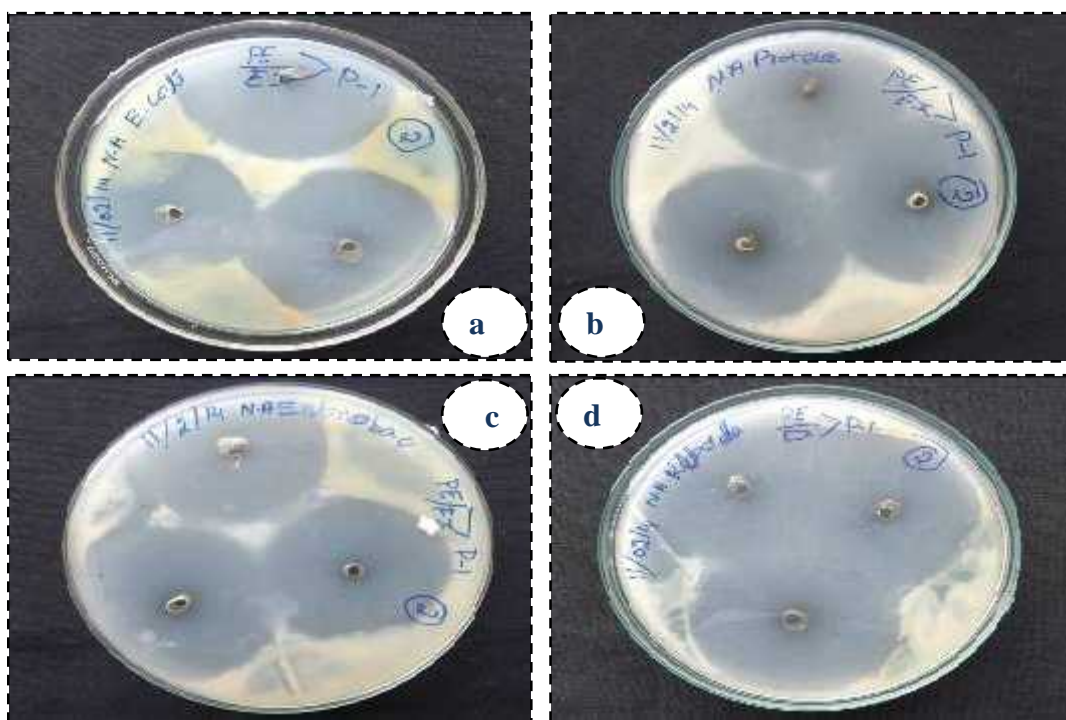


Fig. 1: Photograph of a dish showing zone of inhibition of Petroleum ether extracts against the organisms (a) *E.coli*, (b) *Proteus sp.*, (c) *Enterobacter sp.*, and (d) *Klebsiella sp.*

RESULT AND DISCUSSION

The previous phytochemical evaluation showed the presence of alkaloids, terpenoids and saponins. The results of Antimicrobial activity of petroleum ether extract of *Bauhinia blakeana* are furnished in Table II. The Petroleum ether extract was showed maximum activity against *Klebsiella sp.* (51mm) and moderate activity against *Enterobacter sp.* (45mm). The photographs of the result of Antibacterial activity of Petroleum Ether extracts are presented in Fig.1.

CONCLUSION

In the present evaluation, it has been concluded that the Petroleum Ether extracts of the *Bauhinia blakeana* flowers showed significant antimicrobial potential against the microbes by Agar well diffusion method.

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