ISSN 2581 – 4303

Available Online at www.ijpba.info
International Journal of Pharmaceutical & Biological Archives 2018; 9(1):52-54

RESEARCH ARTICLE

Comparative Antimicrobial Activity of *Bauhinia X Blakeana* Linn. Leaves and Flowers

B. Radhika, K. Shravani, K. Bhavitha, E. Lakshmi

Department of Pharmacognosy, Vaageswari College of Pharmacy, Karimnagar, Telangana, India

Received 19 Mar 2018; Revised 21 Mar 2018; Accepted 24 Mar 2018

ABSTRACT

Antimicrobial activity of methanolic extract of leaves and flowers of *Bauhinia x Blakeana* was resolved against Gram-positive and Gram-negative microscopic organisms. Streptomycin was utilized as reference principles for examination of action. It was discovered that fluid concentrate has antimicrobial activity against *Escherichia coli* and *Lactobacillus* leaves have good activity than flowers.

Keywords: Bahunia X blackenea, Escherichia coli, Lactobacillus, Streptomycin

INTRODUCTION

Plants play an important role in maintaining human health. *Bauhinia* variety of family Caesalpiniaceae (Fabales) contains 15 species that happens in India. Some of them are bushes or trees while couples are climbers. *Bauhinia x Blakeana* (Hong Kong orchid tree), this little tree develops to around 20 feet tall with a light dark smooth bark and an umbrella-shape propensity.[1,2] It has rich rose-purple fragrant blooms with pink stamens; the brings down is bigger than on other bauhinia (5–6 creeps in distance across) and over a more drawn out period, frequently beginning in fall and reaching out to midspring. It is additionally sterile so it does not set seed units. This semi-deciduous tree can be dry season deciduous in dry soils, icy deciduous in case of an ice yet even in a watered hotter areas will drop some of its dark green leaves in spring similarly as it blossoms and can, in some cases, be found in sprout totally without leaves so the blooms are significantly more detectable. Plant in full sun in a moderately very much depleted soil and inundate frequently too periodically. Endure of light ices and temperature down to 25ºF. An incredible tree in reasonably ice-free regions with blooms that are extremely alluring to people and hummingbirds and even as they drop, make a bright groundcover.[3,4]

Address for correspondence:
B. Radhika,
E mail: radhiyre@gmail.com

PLANT MATERIALS

For the present investigation, *Bauhinia x Blakeana* leaves and flowers were collected in the month of September 2017 from Thimmapur village of the Karimnagar district. The plant was identified and authenticated by BSI/DRC/2017-2018/TECH/779. The leaves were dried in shade and stored at 25°C. It was powdered, passed through sieve no.40, and stored in air-tight container.

Drugs and Chemicals

Streptomycin (Piramal healthcare limited), Methanol (Merck Life Sciences [p] Ltd.), Agar medium (Hi-Media laboratories Pvt. Ltd), and Broth (Central Drug House Pvt. Ltd) were used during the experiment.

Antibacterial Evaluation

Preparation of extracts

Methanolic extract of *Bauhinia x Blakeana* leaves and flowers was prepared by Soxhlation method at suitable temperature. 50 g of powdered leaves and flowers is prepared as a thimble separately and placed in the condenser and in the round-bottomed flask required amount of methanol was taken. Soxhlation process was carried out for 6 h. The extract obtained was evaporated and dried in desiccators.[5]

Selection of Bacterial Strain

Medically important bacterial strains used in this study were *Lactobacillus* and *Escherichia coli*

Table 1: Comparative study of leaves and flowers of *Bauhinia X Blakeana*

Type of bacteria	Diameter of zone of inhibition (mm)				
	Methanol				Streptomycin (standard)
	Leaves (mg/mL)		Flowers (mg/mL)		
	10	20	10	20	10
E. coli	13	17	11	14	22
Lactobacillus	12	14	10	12	18

E. coli: Escherichia coli

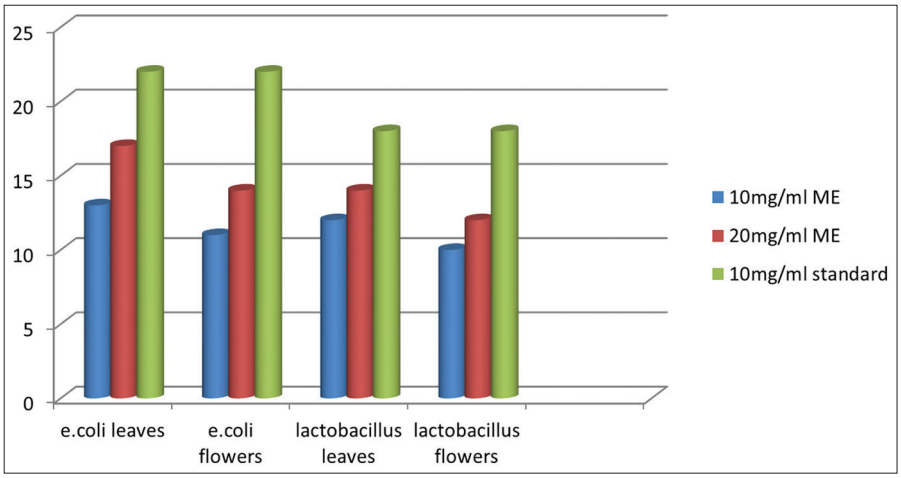

Figure 1: Antimicrobial activity of leaves and flowers on *Bauhinia X Blakeana*

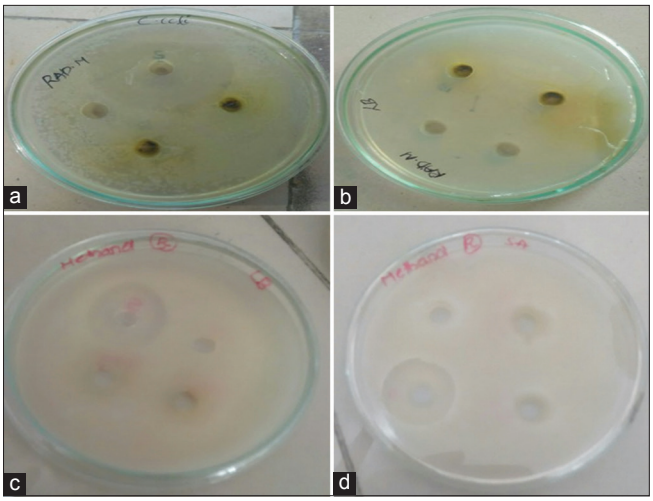

Figure 2: (a) *Escherichia coli* of leaves, (b) *Lactobacillus* of leaves, (c) *E. coli* of flowers, (d) Lactobacillus of flowers

which were procured from MTCC (IMTECH), Chandigarh, India. These bacteria served as test pathogens for antibacterial activity.

Standard reference antibiotic

The reference antibiotic used is streptomycin obtained from Hi-Media.

Preparation of Broth Culture

For the preparation of broth culture for bacteria, the liquid media was prepared by the standard composition for broth culture. After the sterilization of media, the bacterial strains were inoculated under laminar air flow. The incubation of inoculated media was carried out at 37°C for 48 h.[6]

Preparation and Sterilization of Media

The require amount of nutrient agar was weighed and dissolved in 500 mL of distilled water and dissolve the agar by heating, then plug with cotton and autoclave for 15 min (121°C, 15 lbs pressure) to sterilize the media.[7]

Plating the Media

Sterilized media was poured to the Petri dish (presterilized in oven for 2 h at 200°C to avoid contamination). The plated Petri dishes were kept on a flat platform to avoid non-uniform solidification of medium. All these operations were done in a sterile room which was fitted with laminar air flow.

Bacterial Culture Preparations

Bacterial cultures were inoculated in the freshly prepared nutrient broth (which are prepared prior

and sterilized) and kept on rotary shaker for 24 h and observed for growth (turbidity indicates the growth). 1-day-old cultures are used for testing and determination of each extract.

Antimicrobial Assay

Agar well diffusion method

Agar well diffusion technique is broadly used to assess the antimicrobial movement of plants or microbial concentrates. Essentially to the methodology utilized as a part of disc diffusion technique, the agar plate surface is inoculated by spreading a volume of the microbial inoculum over the whole agar surface. At that point, an opening with a width of 6–8 mm is punched aseptically with a sterile cork borer or a tip, and a volume (150 µL) of the antimicrobial agent or extract solution at desired concentration (10 mg/mL, 20 mg/mL). A negative control was maintained using 150 µL of sterile water in a well and 150 µL of standard antibiotic (streptomycin at 10 mg/mL) was the positive control, are introduced into the well. Triplicates were maintained for each extract. Then, agar is incubated for 18–24 h at 37°C under sterile conditions depending on the test microorganism. The antimicrobial agent diffuses in the agar medium and inhibits the growth of the microbial strain tested.

RESULTS AND DISCUSSION

By the present results, it was confirmed that the leaves and flowers extract of *Bauhinia x Blakeana* has antimicrobial activity. The different concentration of methanolic extract by Soxhlation process shows antimicrobial activity against the tested microorganisms *Lactobacillus* and *E. coli*. The antimicrobial activity of leaves is more compared to flowers and it shows the better activity than flowers. The objectives of the present paper were to study antimicrobial activity of methanolic extracts of the leaves and flowers of *Bauhinia x Blakeana* Linn. The methanolic extract showed minimum inhibitory concentration (MIC) against all the organisms at concentration (10 mg/Ml, 20 mg/mL) as shown in Table 1. Methanol extract was effective against *Lactobacillus* and *E. coli* with MIC being 150 µL. The extract obtained from Soxhlation formed zone of inhibition.

REFERENCES

1. Gupta R, Paarakh PM. Antibacterial activity of different extracts of the plant *Bauhinia variegate* Linn. Int J Chem Sci 2009;7:2377-83.
2. Kubdi MS, Khadabadi SS, Saboo SS, Ghorpade DS, Modi AJ. *In-vitro* antimicrobial activity of the crude extracts of *Colocasia esculenta* leaves (araceacea). Int J Pharm Sci Res 2010;1:88-91.
3. Reyad-UI-ferdous, Akhter S, Khan ZI, Khan E, Islam A, Ullah S. *Ex-vivo* anti-inflammatory and antimicrobial activities of the leaves of *Bauhinia accuminata*. Am J Life Sci 2014;2:267-70.
4. Balouiri M, Sadiki M, Ibnsouda SK. Methods for *in vitro* evaluating antimicrobial activity. A review. J Pharm Anal 2016;6:71-9.
5. Radhika B. Comparitive study of soxhlation and maceration extracts of *Tabernaemontana divaricta* leaves for antibacterial activity. J Natl Prod Plant Resour 2017;7:34-9.
6. Available from: http://www.en.wikipedia.org/wiki/sterilization.
7. Available from: http://www.en.wikipedia.org/wiki/Autoclave.