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PHYTOCHEMICAL SCREENING & ANTIMICROBIAL ACTIVITY OF *BAUHINIA TOMENTOSA* (LINN.) FLOWER

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ABSTRACT

Bauhinia tomentosa (Linn.) (caesalpiniaceae) is a handsome, more or less deciduous or medium to large shrub to a small tree, up to 4 m in height. The plant flower contains flavonoids such as isoquerlitrin 6%, rutin 4.6% and a small amount of quercetin. The present study deals with the phytochemical screening and antimicrobial activity of the flower of *Bauhinia tomentosa* (Linn.) using cup plate method. The powdered material (flower) was extracted with Ethanol. The phytochemical screening and antimicrobial activity of *Bauhinia tomentosa* (Linn.) flower was determined by using the standard method. The phytochemical screening of ethanolic extract of *Bauhinia tomentosa* (Linn.) flower indicated the presence of Flavonoid was one of the chemical constituents. The activity was evaluated on bacillus lichiniformis, streptococcus faecalis, staphylococcus aureus, Escherichia coli, klebsiella pnemnonial, shigelle joneij, aspergillus niger, candida albicians. The antimicrobial activity of ethanolic extract of *Bauhinia tomentosa* (Linn.) flower in different organisms in different concentration like 1,2,3,4,&5 mg/ml. Antibacterial activity highest concentration of ethanol extract (5mg/ml) having good activity against gram positive organisms (staphylococcus aureus, streptococcus faecalis, bacillus linchiniformis) & against gram negative organisms (shigelle soneij, klebsiella pneumonia, escherchia coli) as compared with the reference ciprofloxacin. Antifungal activity, highest concentration of ethanol extract (5mg/ml) having good activity against fungi (aspergillus niger, candida albicians) as compared with the reference amphotericin-B.

Introduction

Bauhinia tomentosa (Linn.) (caesalpinaceae) is a handsome, more or less deciduous or medium to large shrub to a small tree, up to 4 m in height. The plant flower contains flavonoids such as isoquercitrin (6%) rutin (4.6%) and a small amount of quercetin.¹⁻² There is a paucity of scientific data on the phytochemical screening and antimicrobial activity of the flower of the plant. The objective of the present work to evaluate the phytochemical screening and antimicrobial activity of *Bauhinia tomentosa* (Linn.) flower by cup plate method.

Materials and methods

Plant materials

The plant material (flower) was collected from the town of Komarapalayam, Namakkal district, Tamilnadu. The plant was identified and authenticated by Mr.G.V.S.Murthy, Joint Director, Botanical survey of India, southern

circle, Coimbatore. The collected flower were dried in the shade, flower peeled and crushed to coarse powder. The powdered mass was passed through sieve no 60 and used for extraction.

Preparation of extract.

The powdered material (flower) was extracted with Ethanol. The extract were concentrated under reduced pressure to get dry mass (yield 12.3%w/w respectively) the crude extract obtained were subjected to preliminary phytochemical investigation.³⁻⁶

Phytochemical screening

The Ethanolic extract of *Bauhinia tomentosa* (Linn.) flower was subjected to phytochemical screening. The phytochemical screening of Ethanolic extract of *Bauhinia tomentosa* (Linn.) showed the presence of carbohydrate, flavonoids, glycosides, phytosterols, tannins and saponins were identified. The finger print were studied by

TLC and followed by HPTLC. Ethanolic extract of *Bauhinia tomentosa* (Linn.) flower it indicated the presence of Flavonoid was one of the chemical constituents.

Antimicrobial activity

The antimicrobial screening of Ethanolic extract of *Bauhinia tomentosa* (Linn.) flower was investigated for its in vitro antimicrobial property.⁷

Anti-bacterial activity

Cup plate method

Nutrient broth was prepared and inoculated with different species of bacteria and incubated at 37° C overnight. From this overnight culture 1% stock culture was prepared (99 ml of sterile nutrient broth + 1 ml of overnight culture). Nutrient agar was prepared and 25 ml was poured in sterile Petri plates and allowed to cool. Each agar plates were inoculated with 0.2 ml of 1% bacterial culture and spreaded by

spreader. Using a sterile cork borer, 6mm diameter of holes was made in the solidified agar plates containing respective bacterial culture (1%). A total volume of 0.2ml of plant extract was poured into the wells with the concentrations as 1mg/ml, 2mg/ml, 3mg/ml, 4mg/ml and 5mg/ml. One well was poured with standard antibiotic (Ciprofloxacin) and incubated at 37° C for 24 hours. After 24 hours of incubation zone of inhibition was measured in millimeter. The results were tabulated in table no.1

Standard Drug

Ciprofloxacin.

Solvent used

DMSO

TABLE NO: 1**ANTI BACTERIAL ACTIVITY OF BAUHINIA TOMENTOSA LINN**

Name of the Bacteria	Zone of inhibition in mm					
	ciprofloxacin 500µg/ml	1mg/ml	2mg/ml	3mg/ml	4mg/ml	5mg/ml
Shigelle soneii	20	4	6	8	10	16
Klebsiella pneumoniae	20	14	5	6	8	14
Escherichia coli	24	3	7	9	12	15
Staphylococcus aureus	25	4	6	10	13	19
Streptococcus faecalis	22	2	4	8	12	16
Bacillus lichiniiformis	26	4	8	10	14	18

Anti fungal activity**Cup plate method**

Saborauds Dextrose broth was prepared and inoculated with different species of fungal spores and incubated at 28°C overnight. From this overnight culture, 1% stock

culture was prepared (99 ml of sterile saborauds dextrose broth + 1 ml of overnight culture). Saborauds dextrose agar was prepared and 25 ml was poured in sterile petri plates and allowed to cool. Each agar plates were inoculated with 0.2 ml of 1% different species of fungus and

spreaded by spreader. Using a sterile cork borer, 6mm diameter of holes was made in the solidified agar plates containing respective fungal culture (1%). A total volume of 0.2 ml of plant extract was poured into the wells with concentrations as 1mg/ml, 2mg/ml, 3mg/ml, 4mg/ml and 5mg/ml. One well was poured with antibiotic and incubated at 28°

C for 24 hours. After 24 hours incubation zone of inhibition was measured in millimeter. The results were tabulated in table no.2

Standard Drug

Amphotericin – B

Solvent used

DMSO

TABLE NO: 2

ANTI FUNGAL ACTIVITY OF BAUHINIA TOMENTOSA (LINN.) FLOWER

Name of the Fungi	Zone of inhibition in mm					
	Amphotericin-B 500µg/ml	1mg/ml	2mg/ml	3mg/ml	4mg/ml	5mg/ml
Aspergillus niger	20	2	5	8	10	15
Candida albicans	22	3	5	8	11	14

Result and discussion

The phytochemical screening of the Ethanolic extract of *Bauhinia tomentosa* (Linn.) flower shows the presence of carbohydrate, flavonoids, glycosides, phytosterols, tannins and saponins. The finger prints were studied by TLC and followed by HPTLC. Ethanolic extract of *Bauhinia tomentosa* (Linn.) flower it indicated the presence of Flavonoid was one of the chemical constituents. The result in above table is clearly demonstrates the antimicrobial activity of Ethanolic extract of *Bauhinia tomentosa* (Linn.) flower against different microorganisms in different concentration like 1, 2, 3, 4 and 5mg/ml. Antibacterial activity highest concentration of Ethanol extract (5mg/ml) having good activity against gram positive organisms (staphylococcus aureus, streptococcus faecalis, bacillus linchiniformis) & against gram negative organisms (shigelle soneij,

klebsiella pneumonia, escherchia coli) as compared with the reference Ciprofloxacin. Antifungal activity, highest concentration of Ethanol extract (5mg/ml) having good activity against fungus (aspergillus niger, candida albicans) as compared with the reference Amphotericin-B.

The data suggests that the extracts contains compounds may be effectively utilized as a wide spectrum of antimicrobial agent. Further analysis including additional purification of extract and chemical characterization of isolated compounds, along with further antimicrobial testing should be required for identification of compounds and possible mechanism of action of the above said activity.

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