ISSN: 0975-8585

Research Journal of Pharmaceutical, Biological and Chemical Sciences

Evaluation of antimicrobial activity of *Solanum trilobatum* linn. Roots

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ABSTRACT

The *Solanum trilobatum* Linn. (Family: Solanacea) root powder was extracted with chloroform, methanol and screened for its anti-microbial activity against various gram (+) ve, gram (-) ve bacteria and fungal organisms using cup plate agar diffusion method. The results revealed that the chloroform and methanolic extracts shown significant anti-microbial activity at concentrations of 100 mg/ml and 200 mg/ml against tested organisms, particularly these were effective against gram (+)ve bacteria *Bacillus subtilis*, *Staphylococcus aureus*, gram (-)ve bacteria *Escherichia coli* and fungi *Candida albicans, Saccharomycis cerevisicea.*

Keywords: *Solanum trilobatum* Linn., anti-bacterial activity, anti-fungal activity.

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ISSN: 0975-8585

INTRODUCTION

The plant *Solanum trilobatum* Linn. (Family: Solanacea) grows as a climbing undershrub and is widely distributed throughout the state of Andhra Pradesh and Tamilnadu. This plant is well known in Ayurved and Siddha systems. In Sanskrit it is known as 'Alarka', in Telugu 'Alarkapatramu', in Tamil 'Tuduvalai' and in Malayalam 'Tutuvalam'. The roots, berries and flowers are used for cough [1]. The decoction of entire plant is used to treat acute and chronic bronchitis [2]. The review of literature revealed that some chemical constituents like solasodine and β-solamarine have been isolated from whole plant [3]. The *Solanum trilobatum* Linn. posses antioxidant, hepatoprotective, anti-inflammatory, analgesic, antidiabetic and antimicrobial activities [4, 5,6,7,8,9,10]. In this present study the antimicrobial activity of the *Solanum trilobatum* Linn. roots chloroform and methanolic extracts were have been investigated.

MATERIALS AND METHODS

Preparation of extracts

The roots of *Solanum trilobatum* Linn. were collected from the coastal area of Andhra Pradesh. They were dried, powdered and extracted in soxhlet with chloroform and methanol (2 liters each) and concentrated to a small volume. The concentrated extracts were tested for anti-microbial activity.

Procedure

Evaluation of anti-microbial activity:

The anti-bacterial activity of extracts was screened against *Bacillus subtilis, B.pumilis, B.cereus, Staphylococcus aureus* gram (+)ve and *Escherichia coli, Pseudomonus aurgenosa, Proteus vulgaris, Seratia marceseanis* gram (-)ve using agar diffusion cup-plate method [11]. The extracts were tested at 100 mg/ml and 200 mg/ml levels. The results were compared with Neomycin sulphate (10 µg/ml in DMSO). The results are recorded in Table-1.

Table no: 1 Evaluation of Anti-Bacterial Activity

BACTERIA	Chloroform Extract (100 mg/ml)	Methanolic Extract (100 mg/ml)	Chloroform Extract (200 mg/ml)	Methanolic Extract (200 mg/ml)	Solvent Control DMSO	Standard (10 µg/ml)
Bacillus subtilis	18	11	19	15	4	19
Bacillus cereus	11	10	12	13	3	20
Bacillus pumilis	17	11	18	13	3	19
Staphylococcus aureus	12	11	14	12	2	20
Escherichia coli	19	12	20	14	3	18
Pseudomonas aurgenosa	10	10	12	10	2	20
Proteus vulgaris	11	10	12	11	3	20
Seratia marceseanis	10	10	11	11	3	20

Standard Drug: Neomycin Sulphate – 10 µg/ml

ISSN: 0975-8585

The anti-fungal activity of extracts was screened against *Aspergillus niger, Candida albicans*, *Penicillium notatum, Saccharomycis cerevisicea* using agar diffusion cup-plate method. The extracts were tested at 100 mg/ml and 200 mg/ml levels. The results were compared with Nystatin (10 µg/ml in DMSO). The results are recorded in Table-2.

Table: 2 Evaluation of Anti-Fungal Activity

FUNGI	Chloroform Extract (100 mg/ml)	Methanolic Extract (100 mg/ml)	Chloroform Extract (200 mg/ml)	Methanolic Extract (200 mg/ml)	Solvent Control DMSO	Standard (10 µg/ml)
Aspergillus niger	10	11	12	13	3	20
Candida albicans	18	12	19	15	4	20
Penicillium notatum	12	11	13	13	3	18
Saccharomycis cerevisicea	17	15	18	16	2	18

Standard Drug: Nystatin – 10 µg/ml

RESULTS AND DISCUSSION

The tested bacteria and fungi have shown significant susceptibility to the chloroform and methanol extracts of *solanum trilobatum* Linn. roots. Three of the tested bacteria *Bacillus subtilis, Staphylococcus aureus* gram (+)ve, *Escherichia coli* gram (-)ve and two of the tested fungi *Candida albicans*, *Saccharomycis cerevisicea* were found to be more sensitive to the chloroform and methanol extracts of *solanum trilobatum* Linn. roots. The observed activities were further revealed that the amount of activity is increased with concentration of the extract and also the chloroform extract has shown more degree of anti-microbial activity than the methanolic extract.

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