

Anti-Bacterial Activity Studies of *Jasminum grandiflorum* and *Jasminum sambac*

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ABSTRACT

This preliminary phytochemical study of the antimicrobial activity of ethanolic callus extracts focused on two species of *Jasminum*, *J. grandiflorum* and *J. sambac*. The plants are widely used as traditional medicine in India for skin disorders. Preliminary phytochemical analyses of the callus extracts revealed the presence of alkaloids, glycoside, flavanoid, terpenes, tannin, resin, and salicylic acid. The extracts were subjected for screening of *in-vitro* antimicrobial activity against selected disease causing pathogens, viz., *Staphylococcus albus*, *Proteus mirabilis*, *Salmonella typhi*, etc., at concentrations of 500mg/ml, 250mg/ml. The results of antimicrobial activity revealed that all the extracts showed comparatively better activity than other extracts. They can be used as antibiotics.

INTRODUCTION

Plants are the traditional source for many of the chemicals used as pharmaceuticals, biochemicals, fragrance, food colours and flavors. Most valuable phytochemicals are the products of secondary metabolism and possess sufficient chemical or structural complexity (Leung 1980).

According to the World Health Organization, medicinal plants are the best source to obtain a variety of newer herbal drugs. About 80% of individuals from developed countries use traditional medicine, which has compounds derived from medicinal plants. Therefore, such plants should be investigated to better understand their properties, safety and efficacy.

Jasmines are an important group of flowering plants. They are widely cultivated and esteemed for their attractive fragrant flowers. This genus belongs to the family Oleaceae. Moreover, different parts of the plant such as the leaf, stem, bark, and roots are very useful and important in pharmaceutical industries. All contain mannitol. *Jasminum grandiflorum* has diuretic and emmenagogue properties. The fresh juice of leaves is applied to corns, and the leaves are chewed and used in the treatment of ulcerations of the mouth. The leaves contain resin, salicylic acid, and an alkaloid named jasmone. *Jasminum sambac* is used for the treatment of skin diseases, ulcers and fever.

MATERIALS AND METHODS

The materials were collected from palyamkottai, and *in vitro* callus initiation at center for biodiversity and biotechnology, palaymkottai. 5 week old cultured callus were shade dried and extracted with ethanol for 48 hrs in a sox lets assembly. The extracts were concentrated, the percentage yields were calculated, and the extracts subjected to preliminary phytochemical analysis.

The antibacterial activity was tested against the following 3 selected strains: *Proteius mirabilis*, *Staphylococcus albus*, and *Salmonella typhii*. The selected bacterial strains were obtained from scudder lab.

The medium used for antibacterial tests was Muller Hinton (MH) agar (Himedia lab. pvt ltd). Each organism was maintained in its respective culture medium and was recorded for testing by sub culturing on a fresh media.

Antibacterial assay was tested with the method described by Bauer et al. (1966). First, 0.5ml of the diluted microbial culture was spread on a sterile Muller Hilton Agar plate. Then, the pre-soaked and dried discs were placed on the seeded plated and gently pressed down to assure contact with the medium.

Streptomycin 10 mg/ml was used as positive control and the respective solvents which were used to dissolve to ethanol extract served as negative control. The plates were incubated at room temperature for 24hrs. After the incubation period, the inhibition zone around the discs were measured and recoded.

RESULTS

Table 1. Phytochemical analysis of the callus extracts.

phytoconstituents	Jasminum grandiflorum	Jasminum sambac
Alkaloids	+	+
Tannin	+	+
Flavanoid	+	+
Steroid	+	+
Glycoside	+	+
Terpenes	+	+
Resin	+	+
Salicylic acid	+	+

Table 2. Antimicrobial activity of the plant callus extract.

	Conc.	J.grandiflorum	J.sambac	standards
1	A	10.2 ± 0.20	10.0±0.5	

				22.3±0.40
2	B	9.2± 0.6	11.5+/-0.5	24.0± 0.7
3	C	10.6 ± 0.8	14.5± 0.4	25.8± 0.55

The letters indicate the concentration of the extracts at 250 mg/disc, respectively.

Org-organisms:

1. *Saphylococcus aureas*
2. *Proteus mirabilis*.
3. *Salmonella typhii*.

DISCUSSION AND CONCLUSION

The antimicrobial activity of the ethanolic extracts has been shown. Among the extracts, *J. sambac* exhibited highest activity against all the tested strains. It scored highest with *salmonella typhii* and lowest against *staphylococcus aureas*. On the other hand, *J. grandiflorum* scored highest with *Salmonella typhii* and lowest with *Proteus mirabilis*.

The results of the present study suggest that the extracts of *J. grandiflorum* and *J. sambac* callus are effective against the tested pathogens. The present study supports the view that several ethno medical plants might be useful as antimicrobial agents. Significantly, some have been used for many centuries in the development of naval drugs (Heinrich 2000, Heinrich and Simon 2001).

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