



PRELIMINARY PHYTOCHEMICAL SCREENING AND ANTIBACTERIAL ACTIVITY OF *SAMADERA INDICA*

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ABSTRACT

The plant *Samadera indica* is widely used as an antimicrobial agent from ancient times. According to literature, this plant has been less explored for its antimicrobial activity. In this study, the antibacterial activity of this plant was studied using hexane and toluene extracts by agar well diffusion method. Phytochemical study was carried out to find the presence of various phytoconstituents. Zone of inhibition was observed, which led to the conclusion that these extracts of *Samadera indica* possess antibacterial activity.

Key words: Phytochemical, Antimicrobial, *Samadera indica*.

INTRODUCTION

This study was designed to investigate antimicrobial activity and phytochemical screening of *Samadera indica*. It belongs to family Simaroubaceae. It is a small tree upto 11 m in height with stout branches and pale yellow bark. It is widely distributed in evergreen forests and along backwaters of south India. It is traditionally used in vitiated conditions of kapha and pita, leprosy, scabies, pruritis, skin diseases, for treating burns, inflammations, bacterial infections, gonorrhoea, asthma etc.¹

EXPERIMENTAL

Collection

The aerial parts of *Samadera indica* were collected from the wet lands of Ernakulam district of Kerala in the month of February. It was then dried under shade and was powdered

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and subjected to extraction process.

Extraction

The shade dried plant was powdered and was extracted using hexane, and later by toluene by continuous hot percolation method. The excess of solvent was removed by evaporation under reduced pressure and was then stored in a desiccator. The extracts were subjected to preliminary phytochemical studies and antibacterial activity.²

Antibacterial activity

The antibacterial activity of the plant was conducted *in vitro* using agar well diffusion method^{3,4}. Muller-Hinton agar medium was prepared and it was inoculated with bacterial culture of *Proteus vulgaris*, *S. aureus*, and *K. pneumonia*. Wells were made in each agar plate and the plant extracts were tested in the concentration of 100 mg/mL. The test extracts were prepared by dissolving the plant material extract in dimethylsulphoxide (DMSO). The standard used is levofloxacin in the concentration 10 mg/100 mL. Inhibition of microbial growth was determined by observing the zone of inhibition both; in test and standard.³⁻⁵

RESULTS AND DISCUSSION

Phytochemical screening of *Samadera indica* confirmed the presence of triterpenes, steroids, gums and mucilages, steroids and carbohydrates as its major chemical constituents (Table 1). It was observed that alkaloids, glycosides tannins, saponins and phenolic compounds were absent in the extracts of the plant.⁶ Zone of inhibition was clearly observed in the petri dishes cultured with *Proteus vulgaris*, *S. aureus* and *K. pneumonia* both; in test and standard (Table 2).

Table 1: Phytochemical screening of leaf extracts

Chemical constituents	Hexane extract of <i>Samadera indica</i>	Toluene extract of <i>Samadera indica</i>
Glycosides	-	-
Alkaloids	-	-
Tannins and phenolic compounds	-	-

Cont...

Chemical constituents	Hexane extract of <i>Samadera indica</i>	Toluene extract of <i>Samadera indica</i>
Saponins	-	-
Triterpenes	+	+
Carbohydrates	+	+
Steroids	+	+
Gums and mucilages	+	+

Table 2: Antibacterial screening of leaf extracts

Organism	Zone of inhibition (mm)			
	Hexane extract		Toluene extract	
	Test	Standard	Test	Standard
<i>Proteus vulgaris</i>	20	28	21	30
<i>Staphylococcus aureus</i>	20	28	22	30
<i>K. pneumonia</i>	25	30	27	32

Both; the hexane and toluene extract show comparable antibacterial activity. The observed zone of inhibition were 20 mm, 20 mm and 25 mm in the test sample of hexane extract for organisms *Proteus vulgaris*, *S. aureus*, and *K. Pneumonia*, respectively. Similarly, toluene extract showed a zone of inhibition of 21 mm, 22 mm and 27 mm for organisms *Proteus vulgaris*, *S. aureus*, and *K. pneumonia*, respectively.

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Revised : 12.02.2010

Accepted : 15.02.2010