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Antimicrobial activity of *Pseudarthria viscida* (L.)Wight & Arn.,

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Abstract

The present work carried out on the ethanobotanical knowledge and antimicrobial activity of the leaf and stem extract of the *Pseudarthria viscida* (L.)Wight&Arn., Traditionally, this plant is used as cold, skin diseases, fever, headache, wounds and scabies by in an around Kalakad villager. The benzene leaf extracts showed the antibacterial activities against all the testing bacteria such as *Escherichia coli, Pseudomonas aeruginosa, Staphylococcus aureus, Salmonella typhii, Streptococcus pyogens, Serratia marcescens, Klebsiella pneumonia, Enterobacter aeruginosa, Proteus vulgaris, Bacillus subtilis* followed by methanol leaf extracts showed the antibacterial activities against all, except *Escherichia coli* and *Bacillus subtilis*. Hence, the present studies were suggestive for quality evaluation and standardization of prepared a drug and importance for conservation of *P. viscida*.

Keywords: *Pseudarthria viscida*, Ethanobotanical knowledge and Antimicrobial activity.

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1. Introduction

Pseudarthria viscida (L.)Wight & Arn., is belongs to the family Fabaceae. The root and leaves of *P. viscida* contain proteins, tannins and flavonoids and antifungal activity (Deepa *et al.*, 2004). Traditionally the plant uses in cases of biliousness, rheumatism, excessive heat, intestinal poison, fever, diarrhea, asthma, heart diseases, worms and piles (Pankaj 2004; Nadkarni, 1982). Masirkar (2008) reported that its roots contain anti-diabetic activity against alloxan induced diabetes in albino rats. A special feature of higher angiosperm plants is their capacity to produce a large number of organic chemicals of high structural diversity. The so-called secondary metabolites (Evans *et al.*, 1986), which are divided into different categories based on their mechanism of function like chemotherapeutic, bacteriostatic, bactericidal and antimicrobial (Purohit and Mathur, 1999). Healthy environment is a major problem in the developing countries because every day has born new microbial infection defeat people. Due to indiscriminate use of commercial antibiotic resistance in human pathogens is increasing. Hence, we must find out for new antimicrobial substances from various sources like medicinal plants. Medicinal plants constitute the main source of health care products (Ivanona *et al.*, 2005). The present study was aimed at developing an ethnobotanical knowledge, preliminary phytochemical screening and antimicrobial activity for *P. viscida* using leaf and stem extract. It is has been performed which may be used as suggestion for quality evaluation and standardization of prepared a drug.

2. Materials and methods

Healthy plant materials of *P. viscida* were collected from Kalakad in Tirunelveli District, Tamilnadu (Fig.1). The leaves and stem of *P. viscida* were air- dried and powdered. 30gms of powdered materials of *P. viscida* were rolled in a filtered paper and kept in soxhlet apparatus with 250 ml of solvent (Petroleum ether, benzene, chloroform, methanol and water) for the extract preparation at 24h process. For antibacterial activity studies was carried by Whatman No. 1 filter paper (5 mm diameter) disc diffusion method. The selected pathogenic diluted bacteria (0.5 ml) like *Escherichia coli, Pseudomonas aeruginosa, Staphylococcus aureus, Salmonella typhii, Streptococcus pyogens, Serratia marcescens, Klebsiella pneumonia, Enterobacter aeruginosa, Proteus vulgaris, Bacillus subtilis* culture was spread on sterile Muller Hinton Agar plates. The dried discs were placed on the sealed plates and gently pressed down to assure contact with the medium. Streptomycin 5 mg/ml was used as positive control and respective solvents which were used to dissolve the crude extracts served as negative control. The plates were incubated at room temperature for 24 hrs. After the incubation period the diameter of the inhibition zone around the discs were measured and recorded. Three replicates for each concentration were maintained.

Fig.1: Habitat of *P. viscida*

3. Results and Discussion

The methanolic leaf extracts of *P. viscida* were showed the antibacterial activities results represented in the table-1. The distilled water leaf extracts showed the antibacterial activity against *Salmonella typhii, Serratia marcescens* and *Proteus vulgaris* but in stem extract did not have any antibacterial activity against any testing bacteria. Standard (Streptomycin) was produced inhibitory zone active against all the chosen bacteria (Table-1).

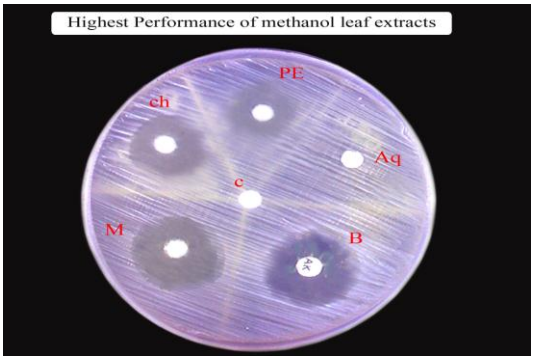

Fig.2: Antibacterial activity

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Table -1: Antimicrobial activity of leaf and stem extract of *Pseudarthria viscida*

Sl. No	Name of the Bacteria	Petroleum ether		Benzene		Chloroform		Methanol		Water		Control
		Leaf	Stem	Leaf	Stem	Leaf	Stem	Leaf	Stem	Leaf	Stem	
1	*Escherichia coli*	7	-	10	-	11	-	-	-	-	-	10
2	*Pseudomonas aeruginosa*	8	-	12	-	12	-	18	-	-	-	9
3	*Staphylococcus aureus*	6	-	9	-	9	-	12	-	-	-	4
4	*Salmonella typhii*	-	-	-	5	5	-	17	-	-	-	15
5	*Streptococcus pyogens*	6	4	9	4	10	6	11	6	5	-	12
6	*Serratia marcescens*	12	-	14	-	17	-	12	-	8	-	7
7	*Klebsiella pneumoniae*	-	-	7	-	8	-	8	-	-	-	8
8	*Enterobacter aeruginosa*	-	-	-	-	5	-	12	-	-	-	5
9	*Proteus vulgaris*	10	-	13	-	13	3	15	3	7	-	14
10	*Bacillus subtilis*	6	-	11	-	9	3	-	3	-	-	7

At present study find out that the selected plants contain, the petroleum ether of leaf extracts showed the antibacterial activity against *Escherichia coli, Pseudomonas aeruginosa, Staphylococcus aureus, Salmonella typhii, Serratia marcescens, Proteus vulgaris and Bacillus subtilis* whereas in stem extracts showed the antibacterial activity against only *Salmonella typhii* only. The chloroform leaf extracts showed the antibacterial activity against *Escherichia coli, Pseudomonas aeruginosa, Staphylococcus aureus, Salmonella typhii, Serratia marcescens, Klebsiella pnemoniae, Proteus vulgaris and Bacillus subtilis*. The benzene leaf extracts showed the antibacterial activities against all the testing bacteria, whereas chloroform and benzene stem extracts showed the antimicrobial activity against *Streptococcus pyrogenes and Salmonella typhii* only. At present, work reported in lot of medicinal plants (Gehlot and Bohra, 2001; Rambir Singh, 2002), *Allium roseum* (Hanen *et al*., 2011), *Cheilanthes albomarginata* (Parihar *et al*., 2007). Now the extracts from stem and leaf extract of *Pseudarthria viscida* also exhibited better results against all the pathogens used. Ethanolic and chloroform extract of the stem showed maximum inhibitory activity when compared with other extracts. The zone of inhibition was proved that all the extracts were highly effective against several bacteria. The activity of stem extract was higher when compared with the leaf extract. The present investigation has find out in a primitive step for pharmaceutical value of this herb. Moreover, it can be used as an alternative source of drugs in the medical field.

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