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ANTIMICROBIAL ACTIVITY OF *APHANAMIXIS POLYSTACHYA* WALL. ROOT BARK EXTRACT IN VARIOUS SOLVENT

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ABSTRACT
The Present study of *Aphanamixis polystachya* Wall. root bark extract in various solvent as antimicrobial agents. The antimicrobial activity is done in Potato dextrose agar medium against microorganism like *E-coli, Bacillus Subtilis, Pseudomonas aeruginosa, Staphylococcus aureus, Xanthomonas citri*. For this study disc diffusion method is used. It shows considerable activity as compare to standard drug (Ciprofloxacin).The results of the present study provide scientific information for the popular use of *Aphanamixis polystachya* Wall. root bark.

KEYWORDS: *Aphanamixis polystachya* Wall. root bark, antimicrobial activity.

INTRODUCTION

Different medical plants have been used for years in daily life to treat disease all over the world. Medicinal plants play important role in primary health care. Major part of potential of medicinal plants is yet to be discovered in health care. Many plant extract of higher plants show antimicrobial activity, but there are many medicinal plants whose activities yet to be discover. Many infectious diseases have been treated with known herbal remedies or single plants throughout the history. The increasing failure of chemotherapeutics and increasing antibiotic resistance shown by pathogenic microbial infectious agent has led to screening of several medicinal plants for their potential antimicrobial activity.[1,2] Antibiotics are sometimes associated with adverse effects including hypersensitivity, immune-suppression and allergic reactions.[3] The researcher studied the antimicrobial activity of ethanol extract of leaf and flower of *Spathodea campanulata P*. Beauv and concluded that the ethanol extracts of both Leaf and flower extract of respective *plant* exhibit significant antibacterial activity against pathogenic bacteria.[4] Leaf extracts of *Aegle marmelos* have been tested for antimicrobial activity against some bacterial species include Gram-positive bacteria and Gram- negative bacteria.[5,6] The leaf extract of *Melia azedarach* L. in various solvents were tested against human pathogens using agar well diffusion method and Minimum inhibitory concentration.[7] The researcher evaluate the phytochemical and antimicrobial activity of twelve medicinal plants of ethanolic extract of plants were evaluated using well diffusion method against pathogens.[8] Antimicrobial activities of four traditional medicinal plants from Nepal were assessed by cold percolation method. Te result showed potential antibacterial effects of *O. corniculata* extracts against bacteria.[9] The extracts of *veronica biloba* in different solvent were used for antimicrobial activity.[10] *Aphanamixis polystachya* Wall is widely used in traditional medicine as antihelmenthic, hepatoprotective, antimicrobial, antirheumatism. It used to cure diseases like liver disorders, tumor, ulcer, dyspepsia, intestinal worms, skin diseases, diabetes, eye diseases, jaundice, hemorrhoids, burning sensation, rheumatoid arthritis, leucorrhoea, muscular pain and spleen diseases.[11-14] occurrence of this plant is subhimalian track from Gonda (uttar Pradesh) eastwards to Bengal, Sikkim, and Asam upto six thousand fits and in western ghats, chota Nagpur, konkan, andaman and adjoin hill ranges from the Poona district southwards to tinnevelly upto 35000 fts.[15]

After review of literature survey the detail study of antimicrobial activity of *Aphanamixis polystachya* Wall. root bark under identical set of experimental condition is still lacking. It was thought of interest to study the antimicrobial activity of *Aphanamixis polystachya* Wall. Root bark under suitable condition.

MATERIAL

The root bark of *Aphanamixis polystachya* Wall. was collected from medicinal plant Garden of College of Ayurveda and Research Centre, Nigdi, Dist. Pune. All the reagents used for preparation of following media / chemicals were A.R. grade and were manufactured by Hi-media, Mumbai and Qualigens, India. Following microorganism were selected for the study ***E-coli, Bacillus Subtilis, Pseudomonas aeruginosa,***

Staphylococcus aureus, Xanthomonas citri. These microorganisms were obtained from standard laboratory maintained in National Chemical laboratory Pune. MGYP medium containing (gL-1): malt extract- 3.0, glucose- 50 to 350, yeast extract- 3.0 and peptone- 5.0, pH- 6.8.[16]

Potato dextrose agar medium: - containing (g/L): potato infusion 200.0; dextrose 20.0 and agar15.0.[17]

METHOD

1. Antibacterial activity

The plates were prepared using Nutrient agar allowed to solidify and dry. Then a 0.1µl microbial suspension was inoculated at the labeled spot (disc) and plates were incubated at 37^0C for 24hr. The results were read by the presence or absence of growth of organism.[18]

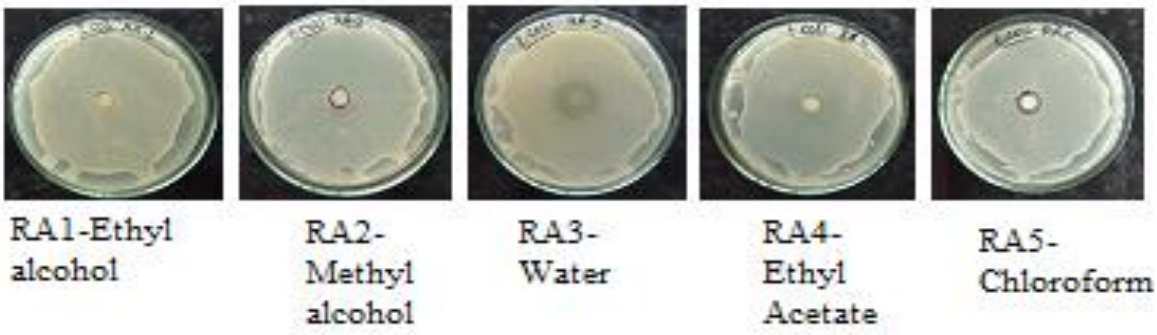
Zone of inhibition

The disc of 5mm diameter were prepared from whatman paper No.41 and sterilized in hot air oven at 160^0C for one hour. The discs were then impregnated with the compounds. The Nutrient agar plates were inoculated with microbial culture by standard procedure. The standard and compounds disc were placed on the agar plates and then the plate were kept at 4^0C for 20min to allow pre-diffusion. The plates were then incubated at 37^0C for 24hour and results were recorded.[19]

RESULT

Antibacterial activity of *Aphanamixis polystachya* Wall. root bark after 24 hrs.

Extract	E. coli	B. subtilis	P. aeruginosa	S. aureus	X. citri
	Concn.(µg/ml) 1000				
Ethyl Alcohol	7	8	-	8	6
Methyl Alcohol	8	11	-	7	10
Water	15	7	12	12	11
Ethyl Acetate	10	-	-	9	6
Chloroform	10	10	-	6	9
Standard Drug (Ciprofloxacin)	23	19	12	17	15
+ ve control (Distilled water)	+ ve	+ ve	+ ve	+ ve	+ ve



DISCUSSION

The highest antibacterial activity with the zone of inhibition (15 mm) was seen against *E. coli* strains by RA3 extract of *Aphanamixis polystachya* Wall. root bark. The lowest antibacterial activity with the zone of inhibition (6 mm) was seen against S. aureus strains by Choroform and X. citri strains by ethyl alcohol and ethyl acetate extract of *Aphanamixis polystachya* Wall. root bark. The zone of inhibition of 7 mm, 8 mm, 15 mm, 10mm and 10mm were seen against *E. coli* strains by ethyl alcohol, methyl alcohol, water, ethyl acetate and chloroform respectively. The zone of inhibition of 8 mm, 11 mm, 7 mm, 10mm were seen against *B.subtilis* strains by ethyl alcohol, methyl alcohol, water and chloroform respectively. The zones of inhibition of 12 mm were seen against *P. aeruginosa* strains by water. The zone of inhibition of 8 mm, 7 mm, 12 mm, 9mm, 6mm were seen against *S. aureus* strains by ethyl alcohol, methyl alcohol, water, ethyl acetate and chloroform respectively. The zone of inhibition of 6 mm, 10 mm, 11 mm, 6mm, 9mm were seen against *X. citri* strains by ethyl alcohol, methyl alcohol, water, ethyl acetate and chloroform respectively. Ethyl acetate shows no activity against *B. subtilis* strain. Also, ethyl alcohol, methyl alcohol, water and chloroform show no activity against P. aeruginosa. *Aphanamixis polystachya* Wall. root bark shows antimicrobial activity as shown in figure.

CONCLUSION

Water extract shows more antimicrobial activity than other solvent extract.

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