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ANTIFUNGAL 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 antifungal activity is done in Potato dextrose agar medium against microorganism like *Aspergillus flavus and Candida albicans*. For this study disc diffusion method is used. It shows considerable activity as compare to standard drug (Fluconazole). 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, antifungal activity.

INTRODUCTION
The performance of antimicrobial activity testing by the microbiology laboratory is important to confirm The resistance in individual fungal isolates. 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.

The researcher studied the various methods for antimicrobial study and provide reliable results by applying procedures according to defined by the CLSI or by the manufacturers of the commercial products.[1] Banjara R. A. et. al have been studied the antimicrobial activity of di-2-ethylaniline phosphate against the against all selected Gram negative bacteria and concluded that di-2-ethylaniline phosphate shows an efficient antibacterial activity.[2] The researchers have been analysed the antimicrobial activity of methanol extracts of *Pleurozium schreberi* (Willd. ExBrid.) Mitt. (Hylocomiaceae), *Palustriella commutata* (Hedw.) Ochyra (Amblystegiaceae), *Homalothecium philippeanum* (Spruce) Schimp. (Brachytheciaceae), *Anomodoattenuatus* (Hedw.) Huebener (Anomodontaceae), *Rhytidium rugosum* (Hedw.) Kindb. (Rhytidiaceae), *Hylocomium splendens* (Hedw.) Schimp. (Hylocomiaceae), *Dicranum scoparium* Hedw. (Dicranaceae), and *etc* against plant, animal, and human pathogenic bacteria and fungi.[3] *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.[4-7]

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.[8] Boukhira Smahaneet.al investigated the antimicrobial potential and also determine the minimum inhibitory concentration (MIC) of five selected species of medicinal plants from Lamiaceae family, namely *Satureja hochreutineri Briq, Teucrium polium, Thymus satureioides, Thymus broussonetti* Boiss. and *Thymus zygis* from wild and *in vitro* cultivated plants in Morocco with a view of searching a novel essential oil as a preservative in cosmetic products.[9]

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 antifungal activity of *Aphanamixis polystachya* Wall. Root bark under suitable condition.

MATERIALS
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 are *Aspergillus flavus* NCIM 535, *Candida albicans* NCIM 3471. These strains have been selected for the basis of its application purpose of further antimicrobial study. These microorganisms were obtained from standard laboratory maintained in National Chemical laboratory Pune.

Potato dextrose agar medium: - Containing (g/L): potato infusion 200.0; dextrose 20.0 and agar15.0.[10]

Method

Paper disc diffusion method for determination of antifungal 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 48 hr. The results were read by the presence or absence of growth of organism.[11]

Zone of inhibition

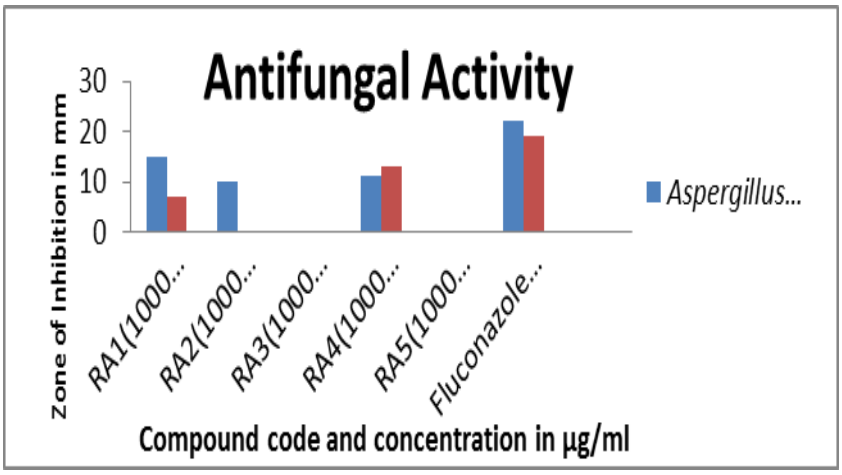
The disc of 5mm diameter were prepared from what man paper No.41 and sterilized in hot air oven at 1600C for one hour. The discs were then impregnated with the compounds. The Nutrient agar plates were inoculated with microbial culture by standard procedure. The standard and compounds disc were placed 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 370C for 24hour and results were recorded.[19]

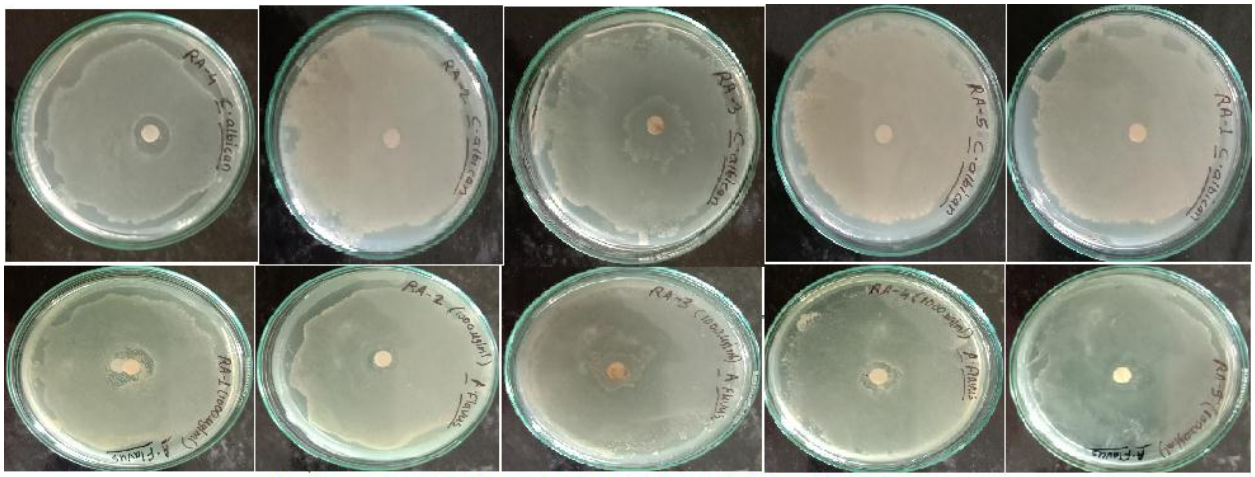
RESULTS AND DISCUSSION

Antifungal potential of extracts were assessed in terms of zone of inhibition of bacterial growth. The results of the antibacterial and antifungal activities are presented in Tables.

Antifungal activity		
Sample Code and Concentration	***Aspergillus flavus***	***Candida albicans***
	Zone of Inhibition After 48 hrs. of Incubation	
RA1(1000 µg/ml)	15	7
RA2(1000 µg/ml)	10	-
RA3(1000 µg/ml)	-	-
RA4(1000 µg/ml)	11	13
RA5(1000 µg/ml)	-	-
Standard Drug (Fluconazole) (1000 µg/ml)	22	19
+ ve control (Distilled water)	+ ve	+ ve

RA1: *Aphanamixis polystachya root* bark extract in ethyl alcohol
RA2: *Aphanamixis polystachya root* bark extract in methyl alcohol
RA3: *Aphanamixis polystachya root* bark extract in water
RA4: *Aphanamixis polystachya root* bark extract in pet ether
RA5: *Aphanamixis polystachya root* bark extract in ethyl acetate





Antifungal activity of root bark of *Aphanamixis polystachya* Wall.

In the present work, the extracts show strong activity against most of the tested bacterial and fungal strains. The results were compared with standard antibiotic drugs. This study also shows the presence of different antimicrobial activity that can be of valuable therapeutic index. The highest antifungal activity with the zone of inhibition (15 mm) was seen against *Aspergillus flavus* strains by RA1 extract of *Aphanamixis polystachya* Wall. root bark. The lowest antifungal activity with the zone of inhibition (7 mm) was seen against *Candida albicans* strains by Choroform and X. citri strains by ethyl alcohol and ethyl acetate extract of *Aphanamixis polystachya* Wall. root bark. The zones of inhibition of 10 mm, 11 mm, were seen against *Aspergillus flavus* by RA2 and RA4 respectively. The zones of inhibition of 7 mm, 13 mm, were seen against *Candida albicans* by RA1 and RA4 respectively.RA3and RA is not shows as antifungal activity.

CONCLUSION

Aphanamixis polystachya root bark extract in ethyl alcohol shows more antifungal activity than other solvent extract.

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