



INVITRO ANTI- FUNGAL ACTIVITY OF *Excoecaria agallocha*. L. FROM PICHAVARAM MANGROVE FOREST

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ABSTRACT: *Excoecaria agallocha*. L. is a mangrove plant about 5 to 8 m tall. It is unisexual, male and female plants are separate. This present study elucidates about antifungal effects crude extracts of leaves from *E. agallocha*. There are five fungal pathogens viz., *Rhizactonia solani*, *Fusarium udum*, *Macrophomina phaseolina*, *Alternaria alternate*, *Sclerotium roysii* were selected for this study. These fungal pathogens were isolated from infected crops and proven pathogens were obtained from CAS Botany Chennai and TNAU, Coimbatore, Tamil nadu. Crude extracts of leaves shows significant antifungal effects against four fungal pathogens except one.

Keywords: Mangrove; Anti-fungal; *Excoecaria agallocha*

INTRODUCTION

Mangroves are woody trees and shrubs that grow in the intertidal zone of tropical and sub tropical region (Duck-1992). Mangrove plant as a 'tree', Shrub, Palm or ground fern, generally exceeding one and half meter in height, and which normally grows about means sea level in the intertidal zone of marine coastal environments, or estuarine margins" kathiresan and Bingham (2001) Who reviewed biology of mangroves and mangrove ecosystem opined "this definition is acceptable except that firms should probably considered mangrove associates rather than true mangroves [5]. The mangrove plant more than 35 Species available in India. Many of the species available in Andaman Nicobar islands, Orissa, West Bengal, Andhra Pradesh and Tamil nadu. *Excoecaria agallocha* .L. tree about 5 to 8 m tall some area grows in sharp. Unisexual, male and female plants are separate. Leaves simple and alternate, elliptical in sharp and apex in acute. Both in the male and female plant leaves female plant are larger than that of male plant and dark green in colour. Leaves are shed during the summer and fresh foliage can be seen during October –November. Bark in gray in colour and smooth, sometimes lenticellate and wityh white latex, Lichens, variously colored and shaped can be seen on the bark. [5]. Mangrove forest have been used for many functions in wood production for lumber firewood and charcoal .Now very important that government around the world adopt rules to limit this utilization .fish poisons and animal food , food and drink for the man and production of methanol and acetic acid . The main source of high potential of medicinal value and agriculture value [3]. The Mangrove performs the various activities in the ecosystem like Photosynthesis and nitrogen fixation, methanogenesis and production of antibiotic and enzyme the result in the high productivity. The Phylloplane fungai is not attack to the live leaves and begin to brake down the leaf maerial.[4]. *Excoecaria agallocha* .L. No prominent aerial roots, Flowers unisexual and inflorescence auxiliary pale green in colour flowering period Aug-Dec. Fruits like that 3balls combined but small size and green colour. Mangrove plants have produced a good source of anti-infective agents that remain highly effective instruments in the fight against microbial infections. Photo -medicines derived from plants have shown great promise in the treatment of infectious diseases. Similarly, higher plants have made important contributions in the areas such as cancer therapies (Nelson 1982). In the current study, we have chosen to *Excoecaria agallocha* .L. Examine the antibacterial and cytotoxic properties of that are either cytotoxic to anti-fungal activity.

MATERIALS AND METHOD

Sample collection: Fresh elder leaf sample was collected from Pichavaram Mangrove forest (Lat.11-27' N, 79 47' E) South east coast of India and washed thrice in tap water to remove the adhering the soil Particles and one time washed in the sterile distilled water. [1].

Extraction of Bioactive: The extraction of crude extract, 100g of sample power was taken in 1 liter capacity round bottom flask and mixed methanol and chloroform and DMSO wait for 48hrs after that filter the sample. To prepare the crude extract [2]. The various funguses were isolated from infected crops and proven pathogens were obtained from CAS Botany Chennai and TNAU, Coimbatore.

Isolation of Fungi

1gm of sample was suspended in 100ml of sterile distilled water. Samples were serially diluted and 0.1ml of sample was spreaded on potato dextrose agar plates and incubated at 72 hrs. Isolated colonies were selected.

Antagonistic activity

All the fungal species was grown on potato dextrose Agar (PDA). Samples dissolved in Methanol, DMSO and chloroform (100mg/ml). Each fungal suspension was spread over the surface of Potato Dextrose Agar Plates. The plates were containing a well of 5mm diameter. The well was filled with 30µl extracts. The plates were incubated at room temperature for 72 hrs. The results were expressed in terms of the diameter of the inhibition zone.

Potato Dextrose Agar

Composition

Potato extract	-	200ml
Dextrose	-	20g
Agar	-	15g
Distilled water	-	800ml

RESULTS

The Present study was made an attempt to fine out the bioactive potential of the plant it shown the crude extract in mangrove plant in the maximum average zone [6] more than five fungal's treated with one sample for leaf cored extract. It can be used in methanol and chloroform and DMSO extraction. They are five fungal samples and ten plates. all fungal species was grow in the potato dextrose agar finally to produced by the zone of the clearance in (MM) *Rhizatonisolani* was methanol and chloroform extract to show the zone in 5MM and another one fungal *Fusarium udum* show the all the extract and *Macrophomina phaselina* to show the clearance in two extract in chloroform and methanol . But *Alternaria alternata* was no reaction in all three extract. Finally to produce by the *Sclerotium roysil* to clear zone will be formed in the chloroform and methanol extract finally to producing. The fungal activity is there in four plates but only one plant no more activity shown in Fig-1.

Table 1: Invitro antifungal activity of *Excoecaria agallocha*

Name of the organism	Zone of the clearance(mm)		
	Methanol Extract	DMSO Extract	Chloroform Extract
<i>Rhizactonia solani</i>	5	-	5
<i>Fusarium udum</i>	15	6	15
<i>Macrophomina phaseolina</i>	11	-	11
<i>Alternaria alternata</i>	-	-	-
<i>Sclerotium roysii</i>	5	-	5

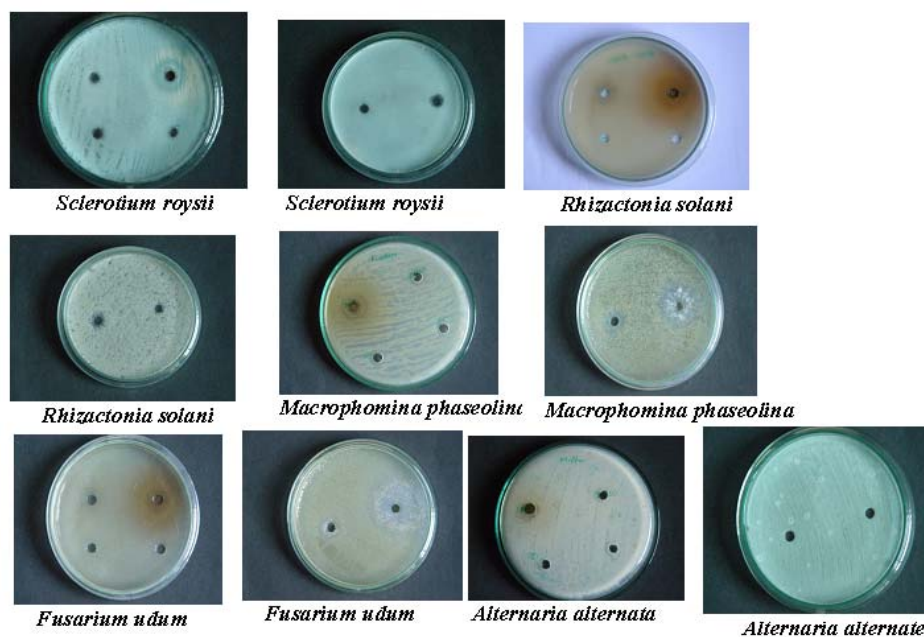


Fig: 1 *In vitro* antifungal activity of *Excoecaria agallocha*

DISCUSSION

There are several treatment for the disease depending on the cause for bacterial infection and fungal infection usually treated with an antibiotic. They are several herbs used in fungal infection. They use of treatments very economical in social situation. [7] The mangrove plant parts after completion of the life cycle and development of the bioactive compounds for the designing of the organic in near future [8] more than 15.3% of the endophytic fungi from healthy mangrove leaves produced in secondary metabolites with antifungal activity. [9] they several disease to be treated in the mangrove plant. Now I have selected for the one plant for mangrove areas the study was antifungal treated in different extraction more than three extraction is different value will be produced.

REFERENCES

- [1] P.Sivaperumal, P.Ramasamy, and S.Jacob Inbaneson and S.Ravikumar. 2009 Screening of antibacterial activity compounds against antibiotic Resistance clinical Isolates, World journal of fish and marine Science 2(5):348-353, 2010
- [2] Aseer Manilal, Sujith, G.Seghal Kiran. 2009. Biopotentials of Mangrove collected from the southwest coast of India., Global journal of Biotechnology & Biochemistry 4(1):59-69
- [3] D.Howard Miles, Udun kokpol, Vallapa Chittawong. 1997. Mangrove forest –The Importance of conservation as a Bioresource for Ecosystem diversity and Utilization as a source of chemical constituents with potential medicinal and Agricultural value, Pure Applied chemistry and Utilization 23-27 November
- [4] Chaitali Nag, Sourav Battacharya and Arijit das. 2012, Evaluation of antagonistic activities of microbes from Vallapattanam and Pappinishery mangrove ecosystem of Kannur district in Kerala, India. International journal of Pharmacy & Life science 3(5): May
- [5] V.Selvam, P.Eganathan, V.M Karunakaran, T.Ravishankar and R.Ramasubramanian, 2004. Mangrove plants in Tamil Nadu., M.S.Swaminathan research foundation Chennai-OCT
- [6] S.Ravikumar, M.Venkatesan and Ajmal Khan and M.Dhinakaraj. 2011. Antimicrobial activity of Sponge associated macro organisms against fish pathogen., World journal of Fish and marine Science 3(1):67-70
- [7] Nicole Bevans, Mac Alford, et al. 2001. Preliminary photochemical study of two Caribbean malvaceae Used in the treatment of conjunctivitis, Journal of Undergraduate study and independent Research., 2, 20-24
- [8] Power P.S and Chavan.S.R, D.K. Gaikwad. 2011. Antifungal activity of mangrove Bark. International journal of Pharma and Biosciences 2.4 Oct-Dec
- [9] Duangnapa Khruayay, Apiradee Pilantanapak. 2012. Antifungal activity of Bioactivity compound from endophytic fungi isolated from mangrove leaves, 1st Mae Fah Luang university international conference.