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Research Article

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Microbial Potential of *Euphorbia hirta*

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ABSTRACT

E*uphorbia hirta* is common weed found all over the world, growing primarily during raining season. The aim of the investigation was to carry out and evaluate the traditional use of E*uphorbia hirta* with reference to antibacterial effect and antifungal effect. The extracts of various stages of phytochemical analysis were taken for to check antibacterial and antifungal properties. The extracts are found to have positive effect with reference to bacteria like E. Coli and Staph Aureus as well as for fungus Aspergillus niger and Candida albicans.

Key words: Extracts, phytochemical analysis, E*uphorbia hirta, antibacterial and antifungal activity,*

INTRODUCTION

The oldest remedies known to mankind are herbal medicines. India is known worldwide for its Ayurvedic treatment. *Euphorbia hirta* is often used traditionally for female disorders, respiratory ailments (cough, coryza, bronchitis, and asthma), worm infestations in children, dysentery, jaundice, pimples, gonorrhea, digestive problems, and tumors. It is reported to contain alkanes, triterpenes, phytosterols, tannins, polyphenols, and flavanoids. This review describes the medicinal properties, chemical constituents, and other important aspects of *Euphorbia hirta*. The plant material of E*uphorbia hirta* was collected from Avsari forest park of Ambegaon Tahisil, Pune. The plant was dried under shade for 8-10 days. The dried plant material was then crushed into powder by using an electronic mixer. The powdered sample was stored in airtight plastic container at room temperature for further analysis.

MATERIALS AND METHODS

Preparation of Extracts

The extracts were prepared as per **Table No.I**

Sample	Solvent	Solvent extract	Weight(gm)	Volume in ml
P	Water	N oxides and Quaternary alkaloids	0.05	5
Q	Chloroform	Terpenoids & Phenolics	0.05	5
R	Chloroform+ Methanol	alkaloids	0.05	5

Table No I: Extract in different concentration for microbial activity

Sample P: Chloroform Extract

Powdered plant material was used for phytochemical extraction. 0.05 gm separated N oxides and Quaternary alkaloids extract was weighed and transferred to 5 ml of Chloroform. The chloroform extract was then collected and filtered through Whatman No. 41 filter paper at room temperature. 40µL of this chloroform sample was used for to study antibacterial potential.

Sample Q: Chloroform and Methanol Extract

Powdered plant material was used for phytochemical Extraction. 0.05 gm of separated Terpenoids & Phenolics extract was weighed and transferred to 5 ml of Chloroform and methanol in volume ratio 3:1. The chloroform and Methanol extract was then collected and filtered through Whatman No.1 filter paper at room temperature. 40µL of this chloroform sample was used for study of antibacterial potential.

Sample R: Aqueous Extract

Powdered plant material was used for phytochemical Extraction. 0.05 gm separated alkaloids extract was weighed and transferred to 5 ml of Water. The aqueous extract was then collected and filtered through Whatman No.41 filter paper at room temperature. 40µL of this aqueous extract was used for to study antibacterial potential.

Preparation of Nutrient Agar

Bacteriological media are of wide range of types. Nutrient Agar is a complex medium because it contains ingredients with contain unknown amounts or types of nutrients. Nutrient Agar contains Beef Extract (0.3%), Peptone (0.5%) and Agar (1.5%) in water. Beef extract is the commercially prepared dehydrated form of autolysed beef and is supplied in the form of a paste. Peptone is casein (milk protein) that has been digested with the enzyme pepsin. Peptone is dehydrated and supplied as a powder. Peptone and Beef Extract contain a mixture of amino acids and peptides. Beef Extract also contains water soluble digest products of all other macromolecules (nucleic acids, fats, polysaccharides) as well as vitamins and trace minerals. Although we know and can define Beef Extract in these terms, each bach can not be chemically defined. There are many media ingredients which are complex: yeast extract, tryptone, and others. The advantage of complex media is that they support the growth of a wide range of microbes. Agar is purified from red algae in which it is an accessory polysaccharide (polygalacturonic acid) of their cell walls. Agar is added to microbiological media only as a solidification agent. Agar for most purposes has no nutrient value. Agar is an excellent solidification agent because it dissolves at near boiling but solidifies at 45oC. Thus, one can prepare molten (liquid) agar at 45^{o}C, mix cells with it, then allow it to solidify thereby trapping living cells. Below 45oC agar is a solid and remains so as the temperature is raised melting only when > 95^{o}C is obtained and used for study. Nutrient Agar contains Beef Extract: 0.3%, Peptone: 0.5% and Agar: 1.5%.

Preparation and sterilization of media

The microbial work was carried out in aseptic area. The additions of the extract, medium and microbial culture was done as per standard procedure. The tubes were then inoculated with 0.05 ml of the standardized culture. The tubes were incubated at temp 37^{o}C for 24 hrs and observed for the turbidity produced. The test procedure was repeated to check the reproducibility of the result. The lowest concentration that can inhibit the growth minimum concentration.

RESULTS AND DISCUSSION

Similar reports for antibacterial activity have been well documented earlier by other extracts, which state that a great number of medicinal plants are less active against gram negative than gram positive organisms. The inhibitory activities of the extracts live up to their potential in the treatment of microbial induced ailments or diseased conditions, in line with the traditional use of plant extracts.

The results of this study shows that Sample P and Q shows antibacterial activity against bacterial pathogens E coli, Sample P and R shows antibacterial activity for Staph. Aureus. Sample P and R shows antifungal activity against candida aibicans and Sample R shows antifungal activity for aspergillus niger species as per data given in table II and Fig I, II, III and Fig I

Sr. No	Compound	Mean Zone of Inhibition In mm			
		Bacteria		Fungus	
		E-coli	Staph. aureus	Aspergillus niger	Candida aibicans
1	P	15	10	-	10
2	Q	10	-	-	-
3	R	-	15	14	10
4	NC	0	0	0	0
5	PC	28	24	22	16

Table II: Antibacterial & Antifungal screening data

Bacteria

1.E. coli (Gram Negative Bacilli)
2. Staphyloccus aureus (Gram Positive Cooci)

Fungus

1.Aspergillus niger
2.Candida albicans

***Positive control for bacteria-Levofloxacin**

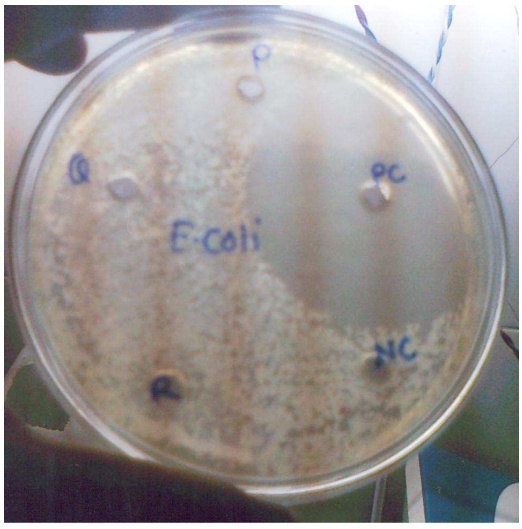

Fig: I

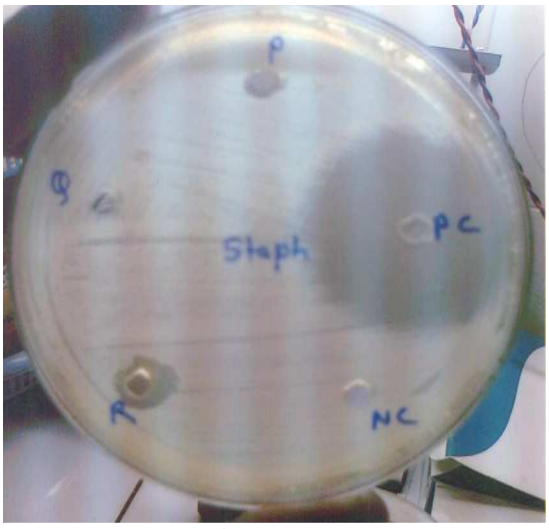

Fig: II

Antibacterial Study with reference to E. Coli and Staphyloccus aureus species

Fig: III

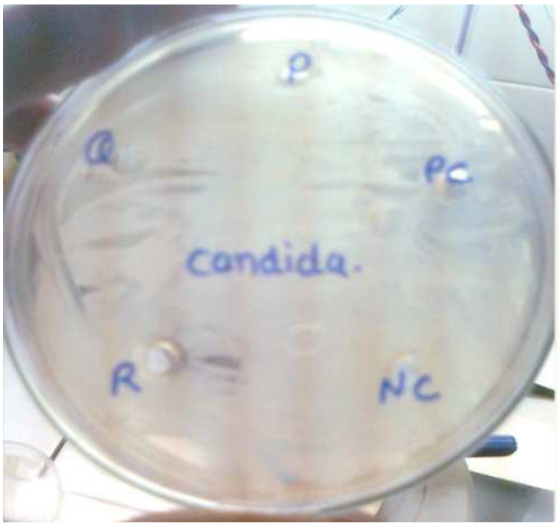

Fig: IV

Antifungal Study with reference to Candida albicans and Aspergillus niger

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