Research Article

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STUDY OF ANTIMICROBIAL POTENTIAL OF *TRIDAX PROCUMBENS* L.

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Abstract: *Tridax procumbens Linn.* is common weed found all over the world, growing primarily during raining season. The extracts of *Tridax procumbens* have been reported to have various pharmacological effects like mosquito repellant activity, leishmanicidal, hepatoprotective, effect on liver antioxidant system, immune-modulatory effect, wound healing activity and antiprotozoal effects. Flavones, sterols, tannins, glycoside, luteolin, glucoluteolin, saturated and unsaturated fatty acids, campesterol, stigmasterol, amyrin, sitosterol, quercetin, polysaccharide and monosaccharide have been isolated from the plant. The aim of the present chapter was carried out to scientifically evaluate the antibacterial study of *Tridax procumbens* and the extracts obtained from various stages of standard phytochemical analysis. These extracts are found to have antibacterial properties.

Keywords: *Tridax procumbens,* Extracts, Common Weed, Phytochemical Analysis.

INTRODUCTION

The plant *Tridax procumbens* was collected from Avsari forest park, Ambegaon, Pune. The plant was identified from Botanical survey of India, Pune. A botanical specimen is preserved for further reference. The plant was dried under shade for 8-10 days. The dried plant was then crushed into powder using an electronic mixer. The powdered sample was stored in airtight plastic container at room temperature for further analysis.

Preparation of Extracts:

The extracts were prepared as per the data given in Table. 1.

Table.1: Extract in different concentration for microbial activity

Name	Solvent	Solvent extract	Weight (gm)	Volume in ml
G	Water	N oxides & Quaternary alkaloids	0.05	5
I	Chloroform	Terpenoids & Phenolics	0.05	5
J	Chloroform + Methanol	alkaloids	0.05	5

Sample G: Aqueous Extract

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

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Sample J: Chloroform

The powdered plant material was used for phytochemical Extraction from which 0.05 gm of separated sample of alkaloids 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. 41 filter paper at room temperature. 40µL of this chloroform sample was used for study antibacterial property.

Sample I: Chloroform and Methanol Extract

The powdered plant material was used for phytochemical Extraction in which 0.05 gm separated alkaloids sample 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 cannot 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 45°C. Thus, one can prepare molten (liquid) agar at 45°C, mix cells with it, then allow it to solidify thereby trapping living cells. Below 45°C agar is a solid and remains so as the temperature is raised melting only when > 95°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°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 is the Minimum Inhibitory Concentration.

RESULTS AND DISCUSSION

Similar reports for antibacterial activity have been well documented earlier, 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 which were obtained from various stages of standard phytochemical analysis. The results of this study shows that Sample I shows positive activity against bacterial pathogens for bacteria like *E. coli* and *Staph aureus* as well as for fungus *Aspergillus niger* and *Candida albicans* and Sample G shows positive activity for bacteria *Staph aureus* and fungus *Candida albicans*. The sample J shows positive antibacterial activity for species like S. aureus, and antifungal property for species like *Aspergillus niger* and *Candida albicans* pathogens given in Table.2. The observations from table No 2 were obtained from Fig.1 and Fig.2.

Table.2: Antibacterial screening data

S. No	Compound	Mean Zone of Inhibition In mm			
		Bacteria		Fungus	
		E. coli	*Staph aureus*	*Aspergillus niger*	*Candida albicans*
1	G	-	10	-	10
2	I	10	11	10	11
3	J	-	12	12	10
4	NC	0	0	0	0
5	PC	28	24	22	16

Species of Bacteria

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

Species of Fungus

1. *Aspergillus niger*
2. *Candida albicans*

*Positive control for bacteria-Levofloxacin

*Positive Control for Fungus-flukanazole

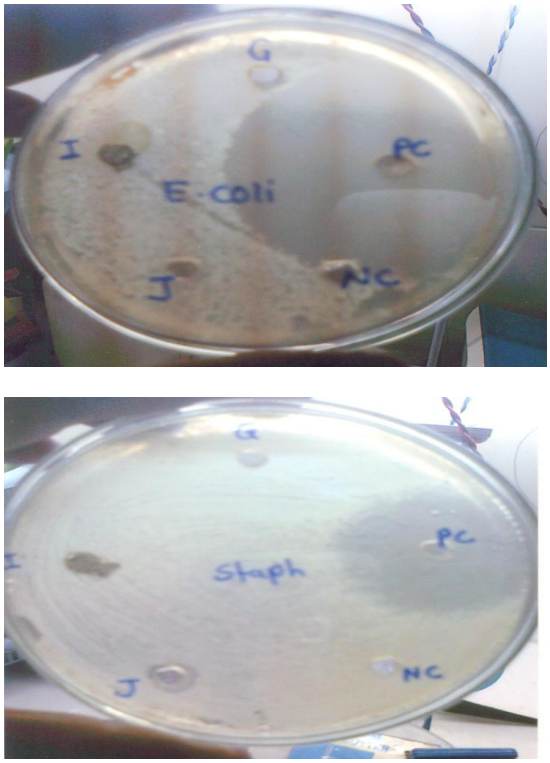
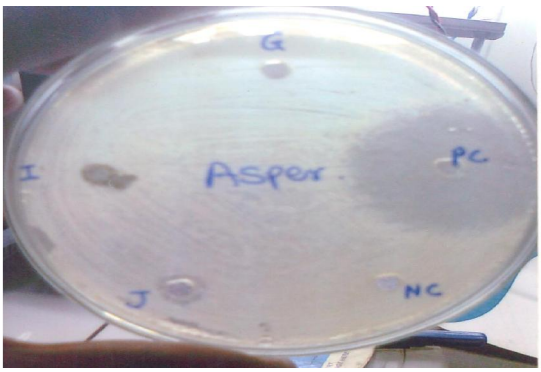


Fig.1: Antibacterial Study with reference to *E. coli* and *Staphyloccus aureus* species



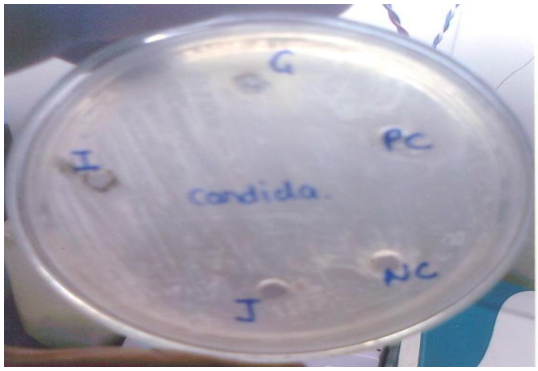


Fig.2: Antifungal Activity with reference to *Aspergillus niger* & *Candida albicans*

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