"Phytochemical analysis and Antimicrobial activity of *Bidens Pilosa* plant extract against Urinary Tract Infections causing microorganisms"

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ABSTRACT

India is the richest source of medicinal plants and herbs since ancient time.Phyto medicines or herbal drugs are extracted from plants and uses as the lead compounds for formulation of synthetic drugs in pharmaceutical industries.Most of the synthetic drugs produced by the phytochemicals which are get by medicinal plants. So the Plants are the most important things for human beings for savings their life.

KEYWORDS: Phytochemical,Antibacterial,UTI,Plants,Extraction.

INTRODUCTION:

A Urinary Tract Infection is an infection that effects on any part of our urinary system such as Kidneys, Ureters, Bladder and Urethra. Most urinary tract infections can be treated with herbal antibiotics ,which are get by the phytomedicines.Urinary infections are common in women but also infection happens into men, adults and childrens also.So the treatment of UTI Iinfections with medicinal plants is considered very safe. Plants and their secondary metabolites (alkaloids,flavonoids,terpens,saponins etc,) are considered as active pharma ingredients (API) of pharmaceutical companies for the production of new drugs.Phytochemicals or secondary metabolites of plants are the biologically active and naturally occurs chemical compounds they found in plants.They provide health benefits for the human beings[1].Phytochemicals contains in different parts of plants such as - roots,stems,leaves,flowers,fruits and seeds[2]. Phytochemicals have the biological as well as medicinal properties such as Antioxidant activity,Antimicrobial activity,modulation of detoxification enzymes, Antidiabetic,Anticancer activity and so on.So it is well known that plants produce secondary metabolites or phytochemicals to protect the human beings against various diseases for savings their life[3].

MATERIAL & METHODS:

Preparation of plant material:

Collect the plant material,shade dried and crushed in powder form for the solvent extraction process by Soxhlet apparatus.

Solvent Extraction Process:

Properly dried material used in the extraction process with different solvents (**Khandelwal,2005 and Kokate,1994).**

45.86gm of powdered aerial parts of *Bidens pilosa* are taken for the extraction process by Soxhlet apparatus with petroleum ether solvent. The extraction was continue till the defatting of the complete plant material by solvents. After the defatting of plant material it is extracted with Hydroalcoholic solvents (Ethanol:Aqueous 80:20 v/v). The completion of the extraction process the plant extracts were evaporated in hot air oven. Finally we get the crude extracts of plant material so the percentage yield of extracts were calculated.

Determination of % yields:

The percentage of yields of plant extracts was calculated by using this formula:-

Percentage (%) yield = Weight of crude extracts of plant x100

Weight of powdered plant sample taken

Phytochemical analysis:

Phytochemical screening were carried out with as per the standard methods of phytochemicals.(Geeta Parkhe & Deepak Bharti,2019)

Antimicrobial activity:-

Antimicrobial activity of *Bidens pilosa* extract was determined by using Agar Well Diffusion assay as described by **Holder and Boyce,1994**. Antimicrobial activity done on the plant extracts by using standard method. Nutrient Agar (NAM) and Potato Dextrose (PDA) media was prepared for growing the microbes inside the laboratory.The standard size (100mm x15 mm) petri dishes as required for the experiment.For the media preparation take 28 gm NAM powder and 24 gm PDA powder mixed with 1000ml of distilled water and stirred to obtain homogenized mixture.after which NAM and PDA mixture was placed in Autoclave under 15psi pressure and 121^{o}c for 25 min for the sterilization of media. After that poured the culture media into perti dishes at ratio of 20ml/dish and left for cool down and solidify at room temperature. The extract and the standard were dissolved in distilled water for the activity.

The plates were triplicates and incubated at 37^{o}C. The antimicrobial activity was carried out on the basis of diameter of Zone of Inhibition,which was measured after two days of incubation and means of three readings is presented.

Statistical Analysis: Plant extract was used for three different UTI causing microorganisms and three determinations were find by the activity of plant extract against microorganisms. So the zone of inhibition (nm) and Standard Deviation were calculated.

"**Antimicrobial activity of microorganisms against standard drugs"**

S.no.	Name of standard drugs	UTI causing microbes	Zone of Inhibition (mm)		
			30µg/ml	20µg/ml	10µg/ml
1.	Ofloxacin	*Streptococcus mutans*	17±0.19	15±0.13	12 ±0.15
2.	Ciprofloxacin	*Klebsiella pneumoniae*	28±0.47	26 ±0.47	23 ±0.47

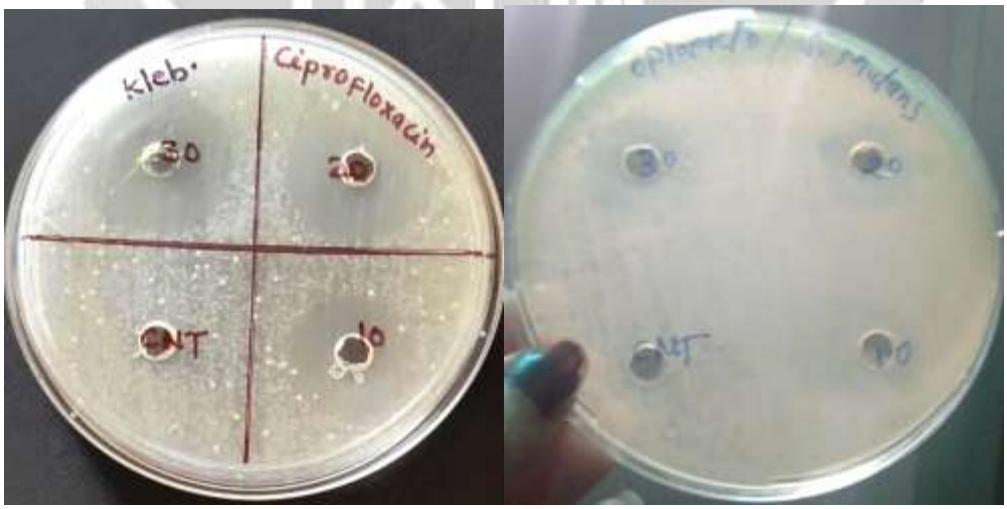

Figure 1: Antimicrobial activity of Standard drugs.

Antimicrobial activity of plant extract:-

"Antimicrobial activity of UTI causing microbes against plant extract"

S.NO	UTI causing microbes	Zone of Inhibition (mm)		
		100 mg/ml	50mg/ml	25mg/ml
1	*Streptococcus mutans*	25 ±0.74	20±0.86	12±0.94
2.	*Klebsiella pneumoniae*	22 ±0.94	19 ±0.47	11±0.47
3.	*Aspergillus nigar*	-	-	-

(-) = No Activity show

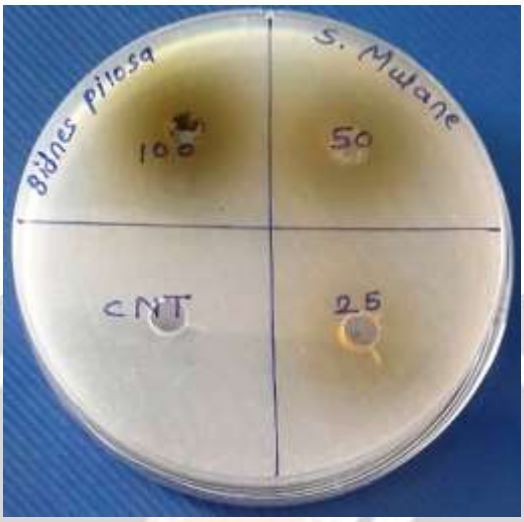

Figure:2 "Antimicrobial activity of *Bidens pilosa* plant extract on *S.mutane*"

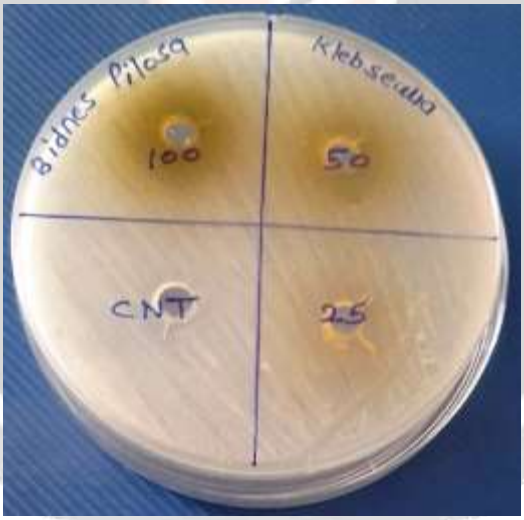

Figure:3 "Antimicrobial activity of *Bidens pilosa* plant extract on *Klebsiella pneumonia*"

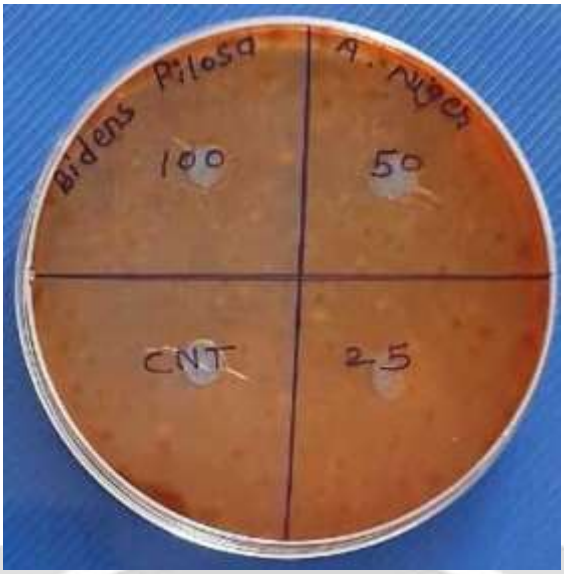

Figure:4 "Antimicrobial activity of *Bidens pilosa* plant extract on *Aspergillus nigar"*

RESULT & DISCUSSION:

Bidens plant is very important medicinal plant and easily available. In this research work, show the antimicrobial activity against UTI causing microorganisms.UTI are very widely spread diseases in recent time. Most of the women, men and children also have UTI infection. In our study we have done the phytochemical analysis of *Bidens pilosa* plant extracts and show their antimicribial activity. In this work plant material collected and prepare for the Solvent extraction process by Soxhlet apparatus by continuous Batch process. After the preparation of the extracts done the different phytochemical tests of plant extracts.

Some phytochemical tests such as Alkaloids (Hager's tests), Flavanoids (Shinoda test & Lead acetate test), Diterpenes (Copper acetate test), Phenol ($Fecl_3$ test), Proteins (Xanthoproteic test) and Saponins (Froth test) are positive and some tests such as Glycosides (Legals' test), Carbihydrate (Fehling's test) are negative. After the phytochemical analysis plant extracts were carried out for antimicrobial activity against UTI causing microorganisms. Such as *Streptococcus mutans* microorganisms shows the activity in different concentrations as 100mg/ml 25±0.74,in 50mg/ml 20±0.86,in 25mg/ml 12±0.94 and *Klebsiella pneumonia* microorganisms shows the activity in 100mg/ml 22±0.94,in 50mg/ml 19±0.47,in 25mg/ml 11±0.47 and *Aspergillus niger* shows the no activity. *Streptococcus mutans* shows highest activity in 100mg/ml concentration.So this plant extract show the activity against UTI causing microorganisms.Our research work give the valuable information about *Bidens pilosa* plant and their effective phytoconsituents against various disease.The research work also support pharmaceuticals industries for the formulation of new drugs against UTI causes microorganisms for human beings.

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