



Received on 08 May, 2011; received in revised form 21 June, 2011; accepted 28 July, 2011

## ANTIMICROBIAL ACTIVITY OF AN ETHNOMEDICINAL PLANT *BIDENS PILOSA* L.

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### ABSTRACT

*Bidens pilosa* L. is a cosmopolitan weed, originally from South America and common in all tropical and subtropical areas of the world. It is a small annual weed occurring all over the country. Roots, leaves and seeds have been reported to possess antibacterial, antidysentric, anti-inflammatory, antimicrobial, and hypotensive activities. Extracts of this plant is used in southern Africa to cure malaria. In tropics also it is used on snakebite and malaria. It is used in traditional medicine as a remedy to treat glandular sclerosis, wounds, colds, flu and urinary tract infections. Leaf extracts in petroleum ether, chloroform, acetone, methanol and distilled water were tested against five bacteria. Maximum zone of inhibition was produced by acetone and petroleum ether extract against *Proteus vulgaris*, and least activity by methanol and aqueous extract against *Bacillus subtilis*.

#### Keywords:

*Bidens pilosa* L.,  
Antimicrobial,  
Ethno medicine,  
Extractive value

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**INTRODUCTION:** Medicinal plants represent an alternative treatment in non-severe cases of infectious diseases. They are possible source for new potential antibiotics to which pathogen strains are not resistant<sup>1</sup>. *Bidens pilosa* L. (Asteraceae) is an annual herb. It is a cosmopolitan weed originally from South America. Traditional healers claim some medicinal plants to be more efficient to treat infectious diseases than synthetic antibiotics<sup>2</sup>.

The ethanol extract of *Bidens pilosa* L. plants is used in folk medicine as an antihelmintic and protozoacide agent; it also has antiseptic properties<sup>3</sup>. Polyacetylene extract of the plant is toxic to yeast and some bacteria. In addition to the acetylene, other compounds such as phytosterol, triterpenes and caffeic acid are reported from *Bidens pilosa*<sup>4</sup>. Ethanol extract of *Bidens pilosa* showed activity against *B. subtilis* and *S. aureus*<sup>5</sup>.

**MATERIAL AND METHODS:** Plants were collected from Melghat forest Dist. Amravati (M.S.), for identification standard floras were referred<sup>6-7</sup>. Mature

leaves were shade dried, powered and stored at 4°C in zip lock bag for further studies. For antimicrobial activity leaves were extracted with petroleum ether, chloroform, acetone, methanol and distilled water by soxhlet for about eight hours. Extracts were dried. The antimicrobial activity of extracts was tested by cup plate method<sup>8</sup> using Muller Hinton nutritive agar medium and Sabarof dextrose agar medium.

Tetracycline was used as standard for comparative study. Culture was procured from NCL Pune. Following strains of bacteria were used - *Bacillus subtilis* NCIM 2063, *Staphylococcus aureus* NCIM 2079, *Escherichia coli* NCIM 2065, *Proteus vulgaris* NCIM 2831 and *Pseudomonas aeruginosa* NCIM 2036. Oven dried leaf extracts were used at concentration of 10 µg/ml dissolved in DMSO for antimicrobial study. Zone of inhibition recorded in mm in each set and average of three considered for comparison after 24 hours of incubation.

**RESULT AND DISCUSSION:** It was found that maximum contents are soluble in water while minimum in petroleum ether (Table 1). Various extracts were tested for gram -ve and gram +ve bacteria. The result obtained is presented in Table 2 and Plate 1 and 2. It is apparent from the results that *Staphylococcus aureus* and *Escherichia coli* is more susceptible to all extracts, On the other hand *B. subtilis* was found to be most

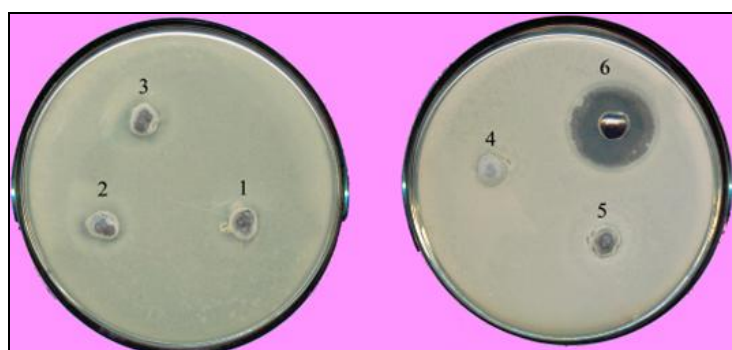
resistant to petroleum ether, chloroform and acetone extracts showing no inhibition.

**TABLE 1: EXTRACTIVE VALUE**

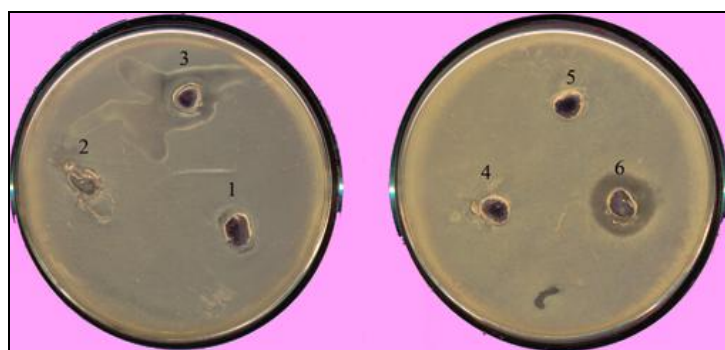
Extractive Value %				
Petroleum Ether	Chloroform	Acetone	Methanol	Water
7.08	6.50	12.56	2.86	13.02

**TABLE 2: ANTIMICROBIAL ACTIVITY OF *BIDENS PILOSA* L.**

Test Microorganism	Zone of Inhibition after 24 Hrs (in mm )					Standard
	Petroleum Ether	Chloroform	Acetone	Methanol	Water	
<i>Escherichia coli</i>	4	3	3	7	4	14
<i>Bacillus subtilis</i>	Nil	Nil	Nil	2	1	15
<i>Staphylococcus aureus</i>	5	2.5	1	1.5	2	10
<i>Proteus vulgaris</i>	2	2	3.5	5	4	18
<i>Pseudomonas aeruginosa</i>	7	8	11.5	Nil	Nil	20



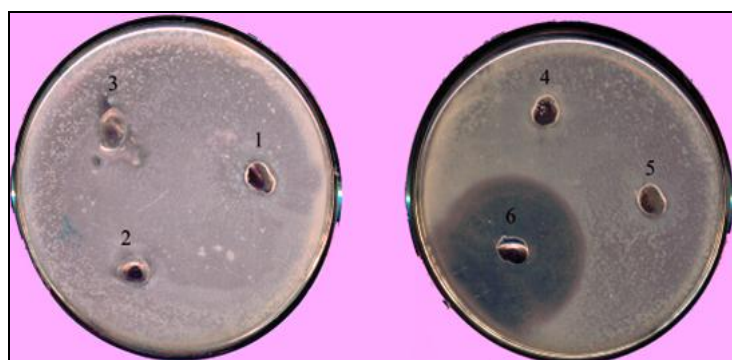
*Escherichia coli*



*Proteus vulgaris*

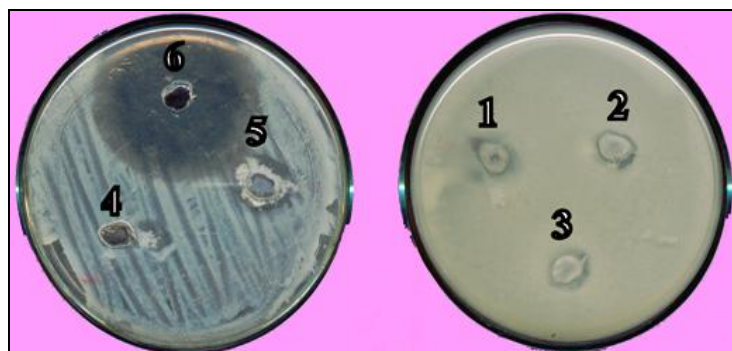
**PLATE 2: ZONE OF INHIBITION**

1. Petroleum Ether; 2. Chloroform; 3. Acetone; 4. Methanol; 5. Water; 6. Standard



*Bacillus subtilis*

**PLATE 1: ZONE OF INHIBITION**



*Staphylococcus aureus*

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