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Preliminary phytochemical and antibacterial screening of crude extract of *Tridax procumbens*. L

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ABSTRACT

Preliminary phytochemical and antibacterial investigations were carried out of the crude extract obtained from the entire plant of *Tridax procumbens* Linn. The presence of phenols, tannins, saponins, flavanoids, aminoacids and reducing sugars was indicated by the tests conducted. The effect of methanol extract was tested on *Staphylococcus aureus*, *Bacillus subtilis*, *Escherichia coli*, *Pseudomonas aeruginosa* and *Salmonella typhi*. The minimum inhibitory concentration of the crude extracts was determined for various organisms.

Keywords: *Tridax procumbens* L, antibacterial activity, minimum inhibitory concentration

INTRODUCTION

Tridax procumbens Linn or the Mexican daisy belongs to the family Compositae. It is common grass found all over the world, growing primarily during raining season. It is a small hair straggling perennial herb which can be easily located among the weeds along the road or in wastelands. The leaves are placed opposite to each other and are ovate-elliptic in shape with deeply dentate leaf margins. The pale yellow composite flowers which may be found all the year round are solitary hairy heads found on all stalks. The matured and dry seeds, each of which are covered with dense silky hairs or pappus are released from the dry flowering heads and dispersed by wind to distract places^[1].

The extracts of *Tridax procumbens* have been reported to have various pharmacological effects like mosquito repellent activity, leishmanicidal, hepatoprotective, effect on liver antioxidant system, immunomodulatory effect, wound healing activity and antiprotozoal effects^[2,3,4,5]. Flavones, sterols, tannins, glycoside, luteolin, glucoluteolin, saturated and unsaturated fatty acids, campesterol, stigmasterol, amyirin, sitosterol, quercetin, polysaccharide and monosaccharides have been isolated from the plant^[6,7,8,9].

The present study was carried out to scientifically evaluate the traditional use of *Tridax procumbens* as antibacterial.

MATERIALS AND METHODS

Sample collection and preparation

The plant *Tridax procumbens* was collected from the areas

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near Katraj lake, Lulla nagar, Parvati and Kausar baug, Pune. The plant was identified at the Botanical survey of India, Pune. A botanical specimen is preserved for further reference (Certificate no. PATTP1). The plant was dried under shade for 8-10 days. The dried plant was then crushed into powder using an electronic blender. The powdered sample was stored in a bottle at room temperature for further analysis.

Preparation of Extracts

Methanolic extraction

Powdered sample of 100gm was weighed and subjected to soxhlet extraction using methanol as solvent. The plant extract was then collected and filtered through Whatman No.1 filter paper. The extract was concentrated at 50°C using a rotatory evaporator and then air-dried. The dried powder was stored at 40°C in an airtight bottle.

Phytochemical Analysis

The extracts were analyzed for the presence of different phytoconstituents using the standard procedure^[10]

Minimum Inhibitory Concentration

Preparation of extracts

1000 mg of dried evaporated extract was dissolved in 100 ml of DMF giving final concentration of 10mg/ml.

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

Table 1 Additions for Minimum Inhibitory Concentration

No of test tubes	Amt of extract (ml)	Amount of medium (ml)	Total volume of solution (ml)	Conc. Of extract in final sol(mg/ml)
1	0.1	9.9	10	0.1
2	0.2	9.8	10	0.2
3	0.3	9.7	10	0.3
4	0.4	9.6	10	0.4
5	0.5	9.5	10	0.5
6	0.6	9.4	10	0.6
7	0.7	9.3	10	0.7
8	0.8	9.2	10	0.8
9	0.9	9.1	10	0.9
10	1.0	9.0	10	1.0

Table2 Minimum Inhibitory Concentration

Name of test organism	MIC (mg/ml)
<i>E.coli</i>	0.6
<i>S.aureus</i>	0.7
<i>Salmonella</i>	0.7
<i>Bacillus subtilis</i>	0.9
<i>Pseudomonas</i>	0.9

per the Table 1. 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^[11].

RESULT AND DISCUSSION

The results of the phytochemical analysis show that phenols, tannins, alkaloids, anthraquinones, saponins, flavanoids, aminoacids and reducing sugars are present in the extract of *Tridax procumbens*. It has also been shown that tannins are biologically active, against *E. coli*, *S. aureus*, *S. paratyphi* and *C. albicans*^[12]. This justifies the traditional use of methanol in extracting the leaf components, to control the pathogenic organisms^[13].

The MIC of the methanolic extract of *Tridax procumbens* against bacterial pathogens, such as *E.coli*, *S. aureus*, *Salmonella*, *B. subtilis* and *Pseudomonas aeruginosa* is observed at 0.6,0.7,0.7,0.9,0.9 mg/ml Similar reports have been well documented earlier, which state that a great number of medicinal plants are less active against gram negative than gram positive organisms^[14,15]. The inhibitory activities of the extracts live up to their potential in the

treatment of microbially induced ailments or diseased conditions, in line with the traditional use of plant extracts.

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