

# Antimicrobial activity of *Tridax procumbens* leaf

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## Abstract

Estimation of the antimicrobial property of *Tridax procumbens*'s leaf was carried out by the use of chloroform, petroleum ether, ethyl alcohol and hexane solvents. Leaf extract of *Tridax procumbens* obtained by Soxhlet extractor, using the above mentioned solvents were examined against *Escherichia coli*, *Bacillus subtilis*, and *Pseudomonas vulgaris*. The antimicrobial activity of *Tridax procumbens* performed by using agar-well diffusion method showed a result showcasing an effective limit when as opposed to *Pseudomonas vulgaris* for ethyl alcohol being used as solvent for extract. In conclusion *Tridax procumbens* leaf extract terminates most propitious source.

**Keywords:** *Tridax procumbens*, Soxhlet extractor, antimicrobial

## Introduction

The traditional medicine has expanded worldwide and is popular. Plants have been used for thousands of years in India and other countries. Herbal medicines serve about 80% of the world's population health need for millions of people. Amongst these, the plants with antimicrobial potential has become the need of today's research. The side effects and toxicities of synthetic antibiotics justifies the need to search new antimicrobial agents from plant source. Although hundreds of plant species have been tested for antimicrobial properties. With this objective, we thought it worthwhile to explore the antimicrobial potential of the leaves of *Tridax procumbens* which has been used in folklore medicine.

*Tridax procumbens* (family-Asteraceae) is a perennial plant. They are available in all seasons. It has been known by several names like coat buttons in English, ghamra in Hindi, Jayanti veda in Sanskrit, herbe caille in French, vettukaaya poondu in Tamil. It is a weak straggling herb about 12-24cm long with few leaves 6-8cm long and grows on road sides, hedges and in wastes globally. The leaves of this plant including other aerial parts except flowering tops have been claimed to be useful in the treatment of inflammatory conditions and have tendency to heal wound, anti-diabetic activity, anti-arthritis activity, preventing hair loss, diarrhoea and serve as insect repellent.

## Materials and Method

**Collection and Extraction of Plant source:** The plant leaves of *Tridax procumbens* were collected from the green house of Periyar Maniammai University, Thanjavur. The freshly collected leaves were dried under sunlight and crushed finely. 100g of dry weight of the specimen was extracted with ethanol, chloroform, petroleum ether and hexane successively each solvent taken in amounts of 100ml each and separated in Soxhlet extractor for 24 hours.

**Preparation of medium:** A total of 350mL of nutrient agar medium was prepared in a conical flask using distilled water and the pH was adjusted between the ranges of 7.8 - 8. Further the flask plugged with cotton tightly and sterilized in an autoclave at 120°C for 15 minutes. After sterilization, when the temperature sinks to 40°C or 50°C the agar medium is poured into petri plates at depth of 2.5-3.5mm inside laminar air flow chamber and allowed to solidify at room temperature.

**Microbial strains:** The microbial strains *Escherichia coli*, *Pseudomonas vulgaris*, *Bacillus subtilis* are used from Department of Biotechnology, Periyar Maniammai University, Thanjavur-613403. These strains were continuously sub-cultured and maintained in nutrient agar.

The antimicrobial study of *Tridax procumbens* leaves by using agar-well diffusion method were compared with ampicillin antibiotic at 200µg/mL as a standard.

## Result and Discussion

The antimicrobial activity result of *Tridax procumbens* with selected organic solvents by agar well method showed in Table I

Table I- antimicrobial activity of *Tridax procumbens* by agar-well diffusion method

Organism	Diameter of inhibition zone(in mm)		
	<i>Escherichia coli</i>	<i>Bacillus subtilis</i>	<i>Pseudomonas vulgaris</i>
Ethyl alcohol	9	11	14
Chloroform	8	7	9
Petroleum ether	5	8	7
Hexane	5	7	10.5
Standard	13	15	17

### Discussion

The use of plants, both the wild and domesticated species has been recorded since ancient times in almost all major civilizations. Ayurveda has been known to be practiced in the Indian subcontinent since long. The specimen under consideration in this particular experiment has also come to notice due to its already predominant use as home strung recipe for infections.

*Tridax procumbens*, as a conclusion of this experiment is found to be most effective as an anti-microbial agent against *Pseudomonas vulgaris*. The use of ethyl alcohol as the solvent for the extract was observably more potent compared to the other solvents.

Phytochemical constituents such as alkaloids, flavanoids, glycosides and several other aromatic compounds are secondary metabolites in plants that have alleviated the pathogenic and environmental stress (Lutterodt et al. 1999 ;)Plant based antimicrobials have enormous therapeutic potential as they can serve the purpose with no or lesser side effects due to an array of secondary metabolites (Lee et al.1999).

This experiment has successfully quantified the anti-microbial activity of *Tridax procumbens*, one of the specimens many know useful applications. We hope the effort put into the experiment and the result obtained would serve as a reference for future advancements in the application of the discussed specimen in medicinal and pharmacological fields.

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