

**ANTIMICROBIAL ACTIVITY OF *CAESULIA AXILLARIS* ROXB AND  
*PSORALEA CORYLIFOLIA* L**Vidya Pradhan<sup>1</sup>, Mazahar Farooqui<sup>2</sup>, T. A. Khan<sup>3</sup>, P. A. Khan<sup>4</sup> and J. V. Khan\*

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**J. V. Khan**Dept. of Biotech., PGCSTR  
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*Caesulia axillaris* Roxb. and *Psoralea corylifolia* L. are commonly occurring plants and known for their folk medicinal value among the local peoples. It was recorded in ancient literature that different parts were used to treat diseases related to bacterial and fungal pathogens. On this aspect, current antimicrobial studies were carried out in different plant parts like leaves, seed and stem in different solvents like hexane, chloroform and methanol. All tests were designed in many replicates against fungal and bacterial pathogens to find out their control activity.

Zone of inhibition in mm was recorded after 24 hrs of inoculation. It was found that methanol extract of leaves in both concentrations (2% and 4%) were showing the best significant result among all in both plant cases. Results indicate that plants having active antimicrobial activity in appropriate concentration and solvents.

**KEYWORDS:** Antimicrobial, Antifungal, Antibacterial activity, Medicinal important, Solvent and Extraction.

**INTRODUCTION**

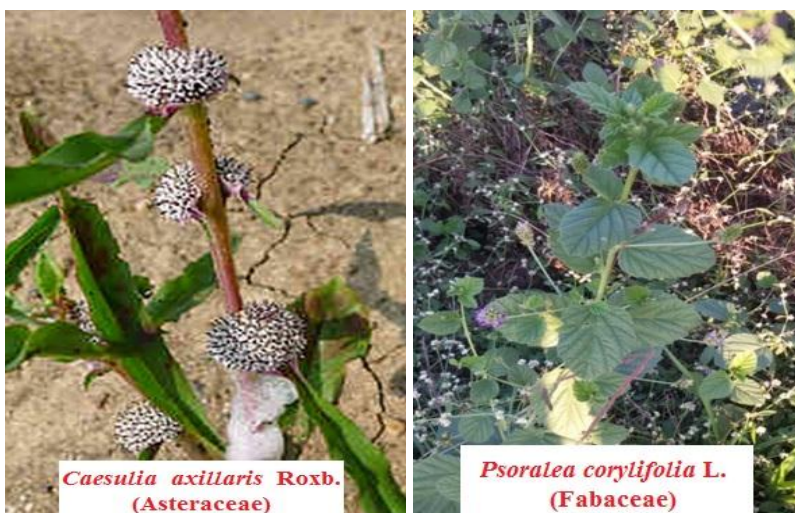
Plants are considerably useful and economically important for all mankind. They may be due to their food value or by means of their active constituents that are used in the treatment of many human diseases. Plants contain hundreds or thousands of chemicals and metabolites that make them medicinally important.<sup>[3]</sup> Medicinal and aromatic plants, a gift of nature, are being used against various infections and diseases in the world since past history. It represents an extraordinary reservoir of novel molecules.

About 43% of total plants from Indian subcontinent (approximately 7,500 species) are reported to have medicinal value.<sup>[8]</sup> In recent years there has been a gradual revival of interest in the use of medicinal plants because herbal medicines have been reported to be safe and without any adverse side effects.<sup>[1]</sup> Much work has been done on ethno medicinal plant in India. Interest in a large number of traditional natural products has increased for finding their phytochemical and antimicrobial activity. It has been also suggested that aqueous and ethanol extracts from plants used in allopathic medicines are potential sources of antiviral and antimicrobial agents.<sup>[5]</sup> That's leads to finding of antimicrobial potential among the local and wild plants.

Herbal raw material is highly susceptible to fungal infection during post harvest processing and storage in tropical and sub tropical countries.<sup>[12]</sup> Most of these fungi are toxemic in nature producing micro toxin, therapy, affecting the quality of herbal raw materials as well as the herbal formulation.<sup>[2]</sup> This is one of the major reasons for decline of Indian share in the global herbal market<sup>[2,5]</sup> which can be control by even by such plant those having antimicrobial activity which include activity against pathogenic fungi as well as bacteria. The effects of plant extracts on fungi and bacteria have been studied by a very large number of researchers in different parts of the world with positive results. Antibacterial activity were recorded in various plant Against *S. aureus*, *S. epidermis*, *B. cereus* etc.<sup>[5]</sup> Antioxidants act as repository of anti-inflammatory, antifungal, antibacterial and anti-carcinogenic.<sup>[10]</sup> Various plant materials are believed to have antifungal activity and many essential oils have been reported to have antifungal activities with no side effects on humans and animals.<sup>[11]</sup> Current work has been done by considering folk medicinal values of *Caesulia axillaris* Roxb. and *Psoralea corylifolia* L. to find out their anti microbial activity against pathogen in lab condition.

*C.axillaris* Roxb from family Asteraceae is known to cure baldness and goitre in traditional Indian system of Medicine. The plant is a common weed abundantly growing in paddy fields in India and showed appreciable yield of EO. Its essential oil has been reported against some insect's pests causing deterioration of food commodities. *Axillar is* have been tested for its efficacy as aflatoxin B1 suppressor and against fungi deteriorating herbal raw materials. Besides, the safety profile of the oil has been observed through animal trails so as to find out its efficacy as a preservative of herbal raw materials. However in the present investigation for the first time the chemically characterised oil of C. The main objective of the present investigation was screening of fungi responsible for biodeterioration of the stored raw

materials of *Andrographis paniculata* Nees, *Terminala bellirica* Roxb. and *Tinosporacordifolia* (Thunb.).<sup>[9]</sup>



*P. corylifolia* is a medicinally important plant, belongs to Fabaceae family. It is well recognized in Indian folkloric medicine. Seeds were used for many decades as traditional medicinal system.<sup>[9]</sup> The seeds are used in indigenous medicine as laxative, aphrodisiac, and diaphoretic in febrile conditions. And it also specially recommended for treatment of leucoderma leprosy and inflammatory diseases of the skin.<sup>[4]</sup>

## MATERIALS AND METHODS

To find out the antibacterial and antifungal activity, suitable scientific technique was applied on both plants. Dry parts of plant were initially subjected to the drift net extraction procedure in different solvents. The factors affecting the choice of solvent are quantity of phytochemical with the rate of extraction, diversity of different compounds extracted, diversity of inhibitory compounds extracted, ease of subsequent handling of the extracts etc (Khan and Patil 2016), to avoid practical error different solvent were used with soxhlet extractions methods form both experimental plant.

Leaves Stem and Seeds of both plant has been collected from Jalgaon local forest area of Maharashtra. Plant material further allowed for shed dry and makes fine powder before using it extraction. For anti microbial analysis each plant sample was extracted in Hexane, Chloroform and Methanol with soxhlet extraction. To find out fungal strain Lactophenol and Cotton blue activity were used. For the growth of fungal strain SMKY Medium, Nutrient Agar, CDA and PDA media were used. For growth of fungus 10 gm of each plant material

added in 90 ml of sterile distill water with shaking for 15 min and then dilutions were made on Potato Dextrose Agar Plate, which allowed for incubate for 7 days at 37° C. Growth of fungus were observed for 4-5 days on plate and further identified by mold colonies in subculture.

Antifungal Activity was tested on PDA media with saline suspension of fungus (*Streptomyces*). Different dilutions of plant material were used and observed Zone of Inhibition after 24 hrs of incubation.

Antibacterial Activity was tested on nutrient agar media by *E. coli*. Serial dilution of extraction of plant part's were used to control the growth and Incubate for 24 hrs followed by observation of Zone of inhibition.

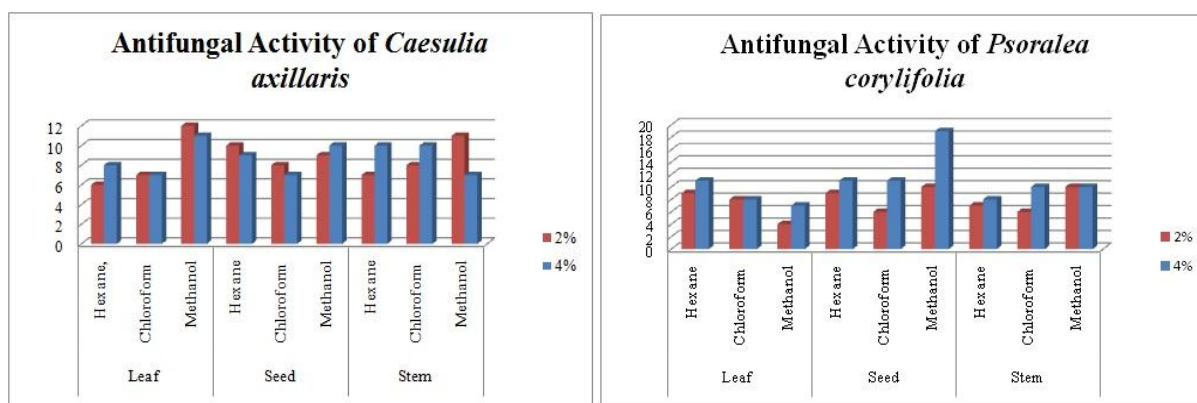
## RESULTS

Antimicrobial activity of the both experimental plant for their different parts has been carried out against suitable pathogen and result were recorded in zone of inhibition among different solvent extract.

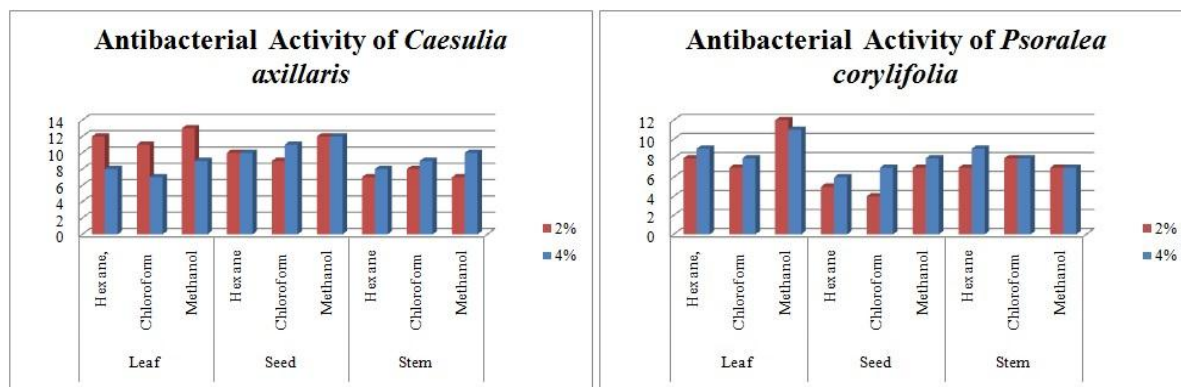
**Table. 1: Antimicrobial Activity for *Caesulia axillaris* and *Psoralea corylifolia* in different solvent.**

Name and Part of Plant	Antifungal Activity		Antibacterial Activity		
	Extract	Zone of inhibition (mm) After 24 hr			
		2%	4%	2%	4%
<i>Caesulia axillaris</i> leaf	Hexane,	6	8	12	8
	Chloroform	7	7	11	7
	Methanol	12	11	13	9
<i>Caesulia axillaris</i> seed	Hexane	10	9	10	10
	Chloroform	8	7	9	11
	Methanol	9	10	12	12
<i>Caesulia axillaris</i> stem	Hexane	7	10	7	8
	Chloroform	8	10	8	9
	Methanol	11	7	7	10
<i>Psoralea corylifolia</i> leaf	Hexane,	9	11	8	9
	Chloroform	8	8	7	8
	Methanol	4	7	12	11
<i>Psoralea corylifolia</i> seed	Hexane	9	11	5	6
	Chloroform	6	11	4	7
	Methanol	10	12	7	8
<i>Psoralea corylifolia</i> stem	Hexane	7	8	7	9
	Chloroform	6	10	8	8
	Methanol	10	10	7	7

Antifungal activity of *Caesulia axillaris* leaf in methanol extract shows significant maximum control among other plant parts and solvent for 2% concentration (then 4%) (Graph1). were it was recorded that *Psoralea corylifolia* seed in methanol extract shows significant maximum control among other plant parts and solvent for 4% concentration (then 2%) (Graph2). Antibacterial activities were maximum recorded in metabolic extract of *Caesulia axillaris* and *Psoralea corylifolia* leaf for 2% of concentration in both plant. In contrast other extract in both plants for all three plant parts were shows least significant among all three extract (Table 1) (Graph 3 and 4).



**Graph. 1: Antifungal Activity of *Caesulia axillaris* Graph 2. Antifungal Activity of *Psoralea corylifolia*.**



**Graph. 3: Antibacterial Activity of *Caesulia axillaris* Graph 4. Antibacterial Activity of *Psoralea corylifolia*.**

## DISCUSSION

Antimicrobial screening of *Caesulia axillaris* and *Psoralea corylifolia* for their Leaf, Seed and Stem in different solvent like hexane, Chloroform and Methanol against suitable pathogen reveals that there is best control of pathogen activity in methanolic extract. That were tested in different concentration in both 2% and 4% concentration of extract that help to control

antifungal and antibacterial activity with respect to different pathogen. Hence, it's important conclusion that for future aspect for result of current work will be the best approach to control antimicrobial activity and also proves that both plant have significant and positive activity in their parts.

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