



POTENTIAL ANTIMICROBIAL ACTIVITY OF (*AMISCHOPHACELUS AXILLARIS* L.) (*COMMELINACEAE*) AGAINST CERTAIN BACTERIAL SPECIES

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Abstract

Amischophacelus axillaris (L.) is a species of perennial plants in the family *Commelinaceae* commonly called Negilu thare in Kannada. In India, leaves are used for the treatment of tympanites and as food for pigs. The crushed leaves were subjected to the hot method of extraction using soxhlet extractor. The extraction method was carried out using numerous solvents *viz.*, pet ether, ethyl acetate and ethanol per their increasing polarity. All the extracts were tested against *Escherichia coli* and *Staphylococcus aureus* by disc diffusion method. In all the extracts *Escherichia coli* exhibited maximum inhibition zone when compared to *Staphylococcus aureus*.

Key words : Antimicrobial activity, *Amischophacelus axillaris* (L.), Bacterial species.

Introduction

Amischophacelus axillaris (L.) is a species of perennial plants in the family *Commelinaceae* commonly called Negilu thare in Kannada. It is narrow to the Indian Subcontinent, southern China, South East Asia, and Northern Australia. It grows in monsoon forest, woodland, and wooded grassland. Traditionally considered febrifuge, anti-inflammatory, antiparasitic and antifungal property. In India, leaves are used for the treatment of tympanites and as food for pigs (Thorn 1977). The use of plant extracts and phytochemicals, both are very important properties for antimicrobial activity and great significance in therapeutic treatments. A number of studies have been conducted to show such efficiency (Abtele and Erdourul 2003; Reddy *et al.*, 2001; Syed Nyamath and Karthikeyan 2018 and Pinkusatnami *et al.*, 2016). However antimicrobial activities of *Amischophacelus axillaris* (L.) on leaves extract of the plant is not reported so far, therefore the present study was undertaken.

Materials and Methods

Collection and identification plant material

Amischophacelus axillaris (L.) leaves were collected in the month of July-August in Agumbe region, Shimoga district, Karnataka. The plant were authenticated

and deposited in the department of Botany Kuvempu University, Shanakaragatta, with voucher number KUAB4688.

Processing and extraction

The collected plant material was shade dried and coarsely pulverized. The pulverized plant material was subjected to the hot method of extraction using soxhlet extractor. The extraction method was carried out using numerous solvents *viz.*, pet ether, ethyl acetate and ethanol per their increasing polarity. The obtained extract was filtered and evaporated to dryness under reduced pressure in a rotary vacuum evaporator.

Screening for antibacterial activity

Agar well diffusion method

Agar well radial diffusion technique was used for the evaluation of antibacterial activity of the test samples. The sterilized nutrient agar medium was poured into fresh petri dishes. Nutrient broth containing 100 µl of 24 h old cultures of respective bacterial strains was spread separately on the agar medium. Wells was made using a stainless steel sterilized cork borer under aseptic conditions. 25, 50, 100 µg/ml of petroleum ether, ethyl acetate and ethanol crude extracts were loaded into corresponding wells. The antibiotic Ciprofloxacin was used

as standard (1 µg/ml of sterile water). The plates were incubated for 24 h at 37 °C and the diameter of the zone of bacterial growth inhibition was measured and the readings were recorded in millimeter (Thippeswamy *et al.*, 2011)

extracts against some bacterial strains are depicted in (Table 1). All the three extracts of *Amischophacelus axillaris* (L.) viz., petroleum ether, ethyl acetate and ethanol have showed a significant inhibitory activity against almost all bacterial strains. Among the three solvents, the leaves extracts of ethanol have maximum

Table 1: It shows antibacterial activity of different solvents extract of *Amischophacelus axillaris* (L.) leaves with standard.

S.No.	<i>Amischophacelus axillaris</i>	Bacterial strains	Inhibition zone in mm			Ciprofloxacin (standard) 1 (µg/ml)
			25 (µg/ml)	50 (µg/ml)	100 (µg/ml)	
1	Pet. ether	<i>E. coli</i>	10	11	14	22
		<i>S. aureus</i>	9	12	13	18
2	Ethyl acetate	<i>E. coli</i>	11	13	15	22
		<i>S. aureus</i>	10	13	14	18
3	Ethanol	<i>E. coli</i>	10	14	17	22
		<i>S. aureus</i>	11	14	15	18

inhibition zone against *Escherichia coli* (17.00 mm) followed by *Staphylococcus aureus* (15.00 mm) at 100 (µg/ml) concentration. The different solvents leaves extract of *Commelinaceae* family shown a better antimicrobial activity, in according with the results obtained by Mohammad *et al.*, (2011). Similarly plant *Amischophacelus axillaris* (L.)

Results and Discussion

The antibacterial activity was determined by measuring the diameter of the zone of inhibition. The different extracts of the plant *Amischophacelus axillaris* (L.) leaves were found to have maximum antibacterial activity. The results of the antibacterial activity of different

belongs to *Commelinaceae* family also showing potent antimicrobial activity when compared with standard drug.



Fig. 1: *Amischophacelus axillaris* (L.) leaves.



Fig. 2: Different solvents extracts of *Amischophacelus axillaris* (L.) leaves.



Fig. 3: Overall view of extraction using Soxhlet apparatus.

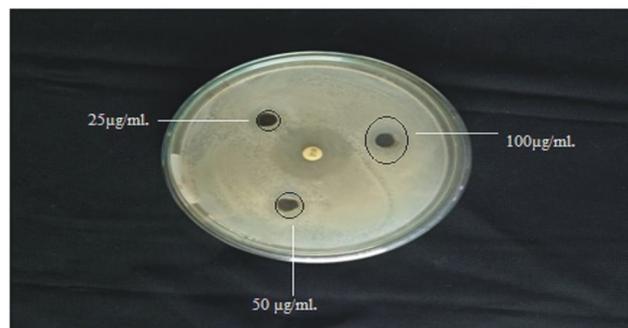


Fig. 4: Inhibitory effect of ethanol extracts of *Amischophacelus axillaris* (L.) against *E. coli* at 100 µg/ml.

Conclusion

The current study reveals that the crude extracts shows prominent antimicrobial properties, which supports its folk medicine. Therefore, there is no doubt that this plant is a reservoir of potentially useful chemical compounds, which serve as drugs and provide modern drug discovery.

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