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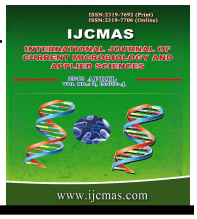

Original Research Article

Antibacterial activity of *Kedrostis foetidissima* (Jacq) Cong

T.Elavazhagan[1,*] and V.Balakrishnan[2]

[1]Research and Development Centre, Bharathiyar University,
Coimbatore-641 046, Tamil Nadu, India
[2]Department of Biotechnology, K.S.Rangasamy College of Technology,
Tiruchengode-637 215, Tamil Nadu India
***Corresponding author e-mail:** elavazhagan_t@rediffmail.com*

Keywords

Keddrostis foetidissima; Antibacterial activity; Agar disc diffusion

A B S T R A C T

The present study was analysed the antimicrobial activity by using acetone, hexane and chloroform extracts in the leaf, stem and fruits of *Kedrostis foetidissima* (Jacq.) Cong. (Cucurbitaceae) against *Pseudomonas sp, Staphylococcus* sp, *Bacillus* sp, *Vibrio cholera, E.coli, Lactobacillus brevis, Lactobacillus bulgaricus, Micrococcus Luteus* and *Proteus vulgaris* was carried out by using agar disc diffusion technique were found to be more effective against the tested bacteria.

Introduction

Medicinal plants are the nature's gift to human beings to make disease free healthy life. In India different extracts are used for the treatment of various diseases. Total 50% modern drugs are of natural products origin and as such these natural products play an important role in the drug development pharmaceutical industry. Use of plant as a source of medicine has been inherited and is an important component of the health care system (Hidayathulla *et al*., 2011). Several antibiotics used for the treatment of human infections, which have limited antimicrobial spectrum. Medicinal plants are the backbone of traditional medicine and the antibacterial activity of plant extract is due to different chemical agent in antimicrobial compounds (Arulmozhi *et al*., 2007). Last ten years the peace of development of new antimicrobial drugs has slowed down while the prevalence of resistance has increased astronomically (Hugo *et al*., 1984). Ethanobotanical records suggest that plants are the sleeping against of pharmaceutical industry (Irobi *et al*., 1996). Antimicrobial properties of medicinal plants are being increasingly reported from different parts of the world (Saxena , 1997). It has been reported that the higher plants have shown to be a potential source for the new antimicrobial agents (Mitschern *et al*., 1987).

The antimicrobial compounds from plants may inhibit bacterial growth by different mechanisms than those presently used. Alkaloids are formed as metabolic by products and have been reported to be responsible for the antibacterial activity (Mantle *et al*., 2000). Flavonoids are phenoloic structures containing one carboxyl group. Flavonoid complexes attach with extra cellular soluble protein and with bacterial cell wall. Thus they exhibit antibacterial activity (Balasubramaniyan, 2012). Therefore may have a significant clinical value in treatment of resistant microbial strains (Eloff, 1988). Therefore, in the present study Kedrostis *foetidissima* (Jacq) Cong. (Cucurbitaceae) were screened for their antibacterial potential against selected strains.

Materials and Methods

The leaves, stems and fruits of *Kedrostis foetidissima* were collected at Villupuram near forest area, Villupuram district, Tamil Nadu, India. The leaves, stems and fruits were shad dried, specimen preserved in 10% neutralized formalin for further identification. The plant was identified with the help of taxonomists. Rapinat Herbarium, Centre for Molecular Systematics, St.Josephs College, Trichirrappalli, Tamilnadu, India.

Chloroform extraction:

The sample was shade dried pulverized, then 10g sample was put into 200ml of chloroform, covered and kept standing for 5 hours. The solvent was then removed after squeezing the sample and filtered through Whatman filter paper No.1. The solvent was evaporated at low pressure by using a Buchi Rota vapor use as crude chloroform extracts.

Acetone Extraction

The Acetone extract of sample was prepared by squeezing the sand-free specimens in triple distilled water. The resultant solution was filtered and dialyzed by using sigma dialysis membrane-500 (Av Flat widsth-24.26mm, A.V. 1.6ml/cm) against D-glucose to remove the excess water. The supernatant so obtained was lyophilized (Labcono Freeze Dry system) and stored at 4ºC in a refrigerator for further uses as crude Acetone extract.

Hexane Extraction

The Hexane extract of sample was prepared by squeezing the sand-free specimens in triple distilled water. The resultant solution was filtered and dialyzed by using sigma dialysis membrane-500 (Av Flat widsth-24.26mm, A.V. 1.6ml/cm) against D-glucose to remove the excess water. The supernatant so obtained was lyophilized (Labcono Freeze Dry system) and stored at 4°C in a refrigerator for further uses as crude Acetone extract.

Test Microorganisms

Nine clinical strains used for the present study *Pseudomonas* sp., *Staphylococcus* sp., *Bacillus* sp., *Vibrio cholera*, *E.coli*, *Lactobacillus brevis, Lactobacillus bulgaricus*, *Micrococcus luteus* and *Proteus vulgaris*. The stock cultures were stored in Nutrient agar medium at 37° C.

Antibacterial Activities

Antibacterial activity of different extracts in *Kedrostis foetidissima* was studied using agar disc diffusion method (Parekh *et al*., 2006). Petridish containing 10 ml of nurient agar medium was selected with 24

hrs culture of a selected bacterial strain. Sterile whatman No:1 filter paper discs (5mm) containing 50 µg/disc of leaf extract, stems and fruits extracts were placed on the surface of the medium. Petri dishes were incubated for 24 hrs at 37°C for bacterial strains (Bauer *et al*., 1996). The assessment of antibacterial activity was based on the measurement of zone of inhibition observed around the discs. Triplicates were maintained for each extract. This investigation was confirmed by agar diffusion technique (Radhika *et al*., 2008).

Results and Discussion

The chloroform extract of leaf, stems and fruits of *Kedrostis foetidissima* showed significant antibacterial activity against all the bacteria tested and tabulated in (Table-1). The maximum zone of inhibition was found in leaf against *Pseudomonas aeruginosa* (10mm) and the minimum zone of *Vibrio cholera* (3mm).

It is known that different solvents extract different compounds, have some active components can only be extracted by polar compounds, while some by less polar and yet some by non-polar compounds (Saxena *et al*., 1999). Antimicrobial activity of essential oil of *Lankana aculeate* was carried out in this study.

The fact that the chloroform fraction lacks some phytochemical components. It may be that there is a form of synergism in the activities of the compounds hence the absence of some reduced the activity of the chloroform fraction (Finnermore *et al*., 1988; Erah *et al*., 1996).

Since the plants used in this study have proved to possess antimicrobial properties and are locally available, they may become alternative sources of antimicrobial drugs that will complement existing antibiotics and or provide novel or lead compounds that may be employed in controlling some infections.

Table.1 Antibacterial activity on *Kedrostis foetidissima* Leaf, Stem and Fruits of different extracts

S.No	Organisms	Leaf			Stem			Fruit		
		H	A	C	H	A	C	H	A	C
1.	*Pseudomonas* sp	6mm	-	10mm	4mm	6mm	7mm	6mm	5mm	8mm
2.	*Staphylococcus sp*	5mm	6mm	5mm	7mm	4mm	3mm	5mm	6mm	7mm
3.	*Bacillus sp*	4mm	7mm	-	-	-	7mm	-	8mm	5mm
4.	*Vibrio cholera*	8mm	5mm	7mm	3mm	8mm	3mm	7mm	-	6mm
5.	*E.coli*	7mm	6mm	4mm	5mm	6mm	8mm	6mm	5mm	6mm
6.	*Lactobacillus brevis*	5mm	8mm	5mm	4mm	5mm	-	8mm	8mm	5mm
7.	*Lactobacillus bulgaricus*	8mm	-	7mm	6mm	6mm	4mm	7mm	6mm	7mm
8.	*Micrococcus luteus*	5mm	4mm	6mm	-	7mm	4mm	7mm	5mm	4mm
9.	*Proteus vulgaris*	-	7mm	8mm	4mm	5mm	7mm	6mm	-	6mm

H- Hexane, A- Acetone, C- Choloroform Extract

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