

ANTIMICROBIAL ACTIVITY OF *CLERODENDRUM PANICULATUM* LINN. LEAVES

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ABSTRACT

Various extracts of *Clerodendrum paniculatum* Linn. leaves against various gram negative bacteria were evaluated by agar-well method. Alcohol extract had good antibacterial activity against *Salmonella newport* and aqueous extract had good antibacterial activity against *E. coli* compared to standard streptomycin. Petroleum ether, chloroform and ethyl acetate extract showed better antibacterial activity against *Vibrio parahaemolyticus* than the standard.

KEYWORDS: Anti microbial activity, Agar-well method, *Clerodendrum paniculatum* Linn, Verbenaceae

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Food borne pathogens such as diarrheagenic serotypes of *Escherichia coli*, *Salmonella*, *Vibrio* are widely distributed in nature, causing considerable mortality and morbidity in the population. It has been reported that, world wide, there are more than 1.3 billion cases of human salmonellosis annually, with three million deaths. Among the various diarrheagenic serotypes of *Escherichia coli*, enterohemorrhagic *E.coli* 0157:H7 is implicated in large number of food borne outbreaks in many parts of the world including developed nations.

Since the introduction of antibiotics, there has been tremendous increase in the resistance of diverse bacterial pathogens. This shift in susceptibility greatly affects our ability to successfully treat patients empirically. Search for new antimicrobials is very important in recent times, considering the escalating levels of antibiotic resistance among pathogenic bacteria.

Gram negative bacteria *Escherichia coli*, *Salmonella newport* and *Vibrio parahaemolyticus* were included in the present study which were obtained from School of Environmental Science, M.G University, Kottayam, Kerala. The strains were isolated from the Cochin estuary in a previous investigation funded by Department of Science and Technology, Govt. of India.

Nutrient broth used was sterile Mueller-Hinton agar medium. The selected strains of bacteria were inoculated into 10 ml of sterile nutrient broth and incubated for 16-18 hours. Using a sterile cotton swab, the nutrient broth cultures were swabbed on the surface of sterile nutrient

agar plates. Agar wells were prepared with the help of sterilized cork borer with 10mm diameter. Using a micropipette, 100 micro liters of extracts were added to different wells in the plate. The plates were incubated in an upright position at 37°C for 24 hours. The diameter of inhibition zones was measured in mm and the results were recorded. The inhibition zones with diameter less than 12 mm were considered as having no antibacterial activity.

The diameter of zone of inhibition of the extracts of *Clerodendrum paniculatum* Linn. against various bacteria is given in table:1.

Alcohol extract had good antibacterial activity against *Salmonella newport* and aqueous extract had good antibacterial activity against *E. coli* compared to standard streptomycin. Petroleum ether, chloroform and ethyl acetate extract showed better antibacterial activity against *Vibrio parahaemolyticus* than the standard.

The results of the present investigation clearly indicate the strong antibacterial activity of the *Clerodendrum paniculatum* Linn. Further studies are required to isolate the active constituents responsible for the antibacterial activity of the plant.

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Table: 1

Tested bacteria	Extracts	Diameter Of inhibition zone (mm)
<i>E. coli</i> (O78)	Petroleum ether	–
	Chloroform	–
	Ethyl acetate	–
	Alcohol	14
	Aqueous	15
	Standard	16
<i>Salmonella newport</i>	Petroleum ether	–
	Chloroform	–
	Ethyl acetate	13
	Alcohol	17
	Aqueous	15
	Standard	18
<i>Vibrio parahaemolyticus</i>	Petroleum ether	23
	Chloroform	22
	Ethyl acetate	21
	Alcohol	18
	Aqueous	14
	Standard	20

Standard- streptomycin (10µg). Control (DMSO) did not show inhibition zone.
Extracts-1000 µg/ml.

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