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Antimicrobial activity of *Acacia nilotica* (L.) Del. plant extracts against *Xanthomonas malvacearum bacteria*

Sumia Fatima[1], Mirza Razia Baig[1], Mumtaz Baig[1] and V. B. Kadam[2]

[1]Plant protection and Pesticides Research Laboratory, Dr. Rafiq Zakaria college for women, Aurangabad-431001 (M.S.), India
[2]K. T. H. M. College Nasik (M.S.), India

Abstract

An experiment was conducted to check antibacterial activity of leaf bark and root extracts of *Acacia nilotica* (L.) Del. Plant against *Xanthomonas malvacearum* bacteria using agar well diffusion method expressed by zone of inhibition in mm in diameter. Antimicrobial activity of leaf, bark, and root extracts were separately assessed in triplicates for aqueous extracts, ethyl alcohol extracts. The results were compared with standard concentrations of antibiotics streptomycin and tetracycline. The ethyl acetate extracts of root seems to contain antibacterial component more than pure antibiotic with the concentration of 500 ug /ml.

Keywords: *Acacia nilolica* (L.) Del., antimicrobial activity, antibiotics, *Xanthomanas malvacaerum*.

INTRODUCTION

The *Xanthomanas malvacaerum* infect the members of family malvaceae and cause heavy loss by defoliation and premature abscission of affected fruit. In view of this it was tried to control its growth by using leaf, bark and root extracts of *Acacia nilotica* (L.) Del. There has been dramatic increase in pathogen resistance to both pharmaceutical and agrochemical antimicrobial agents. New prototype compounds are needed to address this situation [1]. Successful discovery of novel and natural antimicrobial product is needed.Various workers have screened number of angiospermic plants extracts for assay of fungi toxic activity [2 and 3] and it is being done continuously. Marathwada possessed very rich flora of leguminous plants. *Acacia nilotica* (L.) Del. commonly known as Babool belonging to family mimosaceal is very commonly growing medium sized tree grow wild as well as cultivated. Tonia and Johannes (1997) [4] investigation that Acacia nilotica, cassia tora possessed antiplasmodial activity. They found that *Acacia nilotica* ethyl acetate extract possessed the highest antiplasmodial activity. *Xanthomonas malvacearum* (E.F. Smith) Dowson are very common gram negative plant pathogenic bacteria [5].

MATERIALS AND METHODS

The *Acacia nilotica* (L.) Del. plant parts were collected from Aurangabad city. The leaves bark root are shredded and dried completely at 50 deg C for 72 hrs and ground into fine powder and stored in air light containers. Crude extracts of these plant ports were prepared by extracting 2gm of dried material in 20ml distilled water, ethyl alcohol and ethyl acetate for 30 min. Extracts were filtered and dried under vacuum. The samples were air dried and redesolved to 10ml solution and used for antimicrobial testing.

The pure cultures of *Xanthomonas malvacearum* was obtained and maintained on nutrient agar medium (NA). The medium was sterilized at pressure 15lb for 20 min in an autoclave. 8ml of medium was poured in each test tube for slaut preparation cell suspension was prepared by adding sterile water to 48hrs old NA slant culture.

The antimicrobial activity of plant extracts prepared was evaluated by agar well diffusion assay [6] expressed by zone of inhibition mm in diameter. 1ml of cell suspension (1*10^6) was prepared by using haemocytometer. It is poured in each petriplate containing NA medium. The medium was allowed to solidify using sterilized cork bores, wells of 5mm diameter were made in the inoculated medium. The wells were filled with 0.5ml of extract plates were then incubated at 37 deg C for 24 hrs.

Similarly wells containing standard cone of antibiotics streptomycin and tetracycline were used to compare antibacterial property of the plant extract. 100mg of each antibiotic was dissolved separately in 1000ml sterile distilled water, 0.5ml was used to fill the wells and the results were compared.

RESULTS AND DISCUSSION

It is clear from table 1 that all the three solutions of lea bark and root extracts are considerably toxic to test bacterium. The aqueous test micro-organism but the effect of extraction using two different solvents i.e. ethyl alcohol and ethyl acetate enhance the activity of these extracts. The activity in ethanol extract was higher than aqueous extraction while ethyl acetate extraction gave greater activity than that of alcoholic extracts. This was true for all the three parts of *Acacia nilolica* plant.

Dhar et al (1968) [7] reported that the leguminoceae members were active against bacteria, fungi, protozoa an virus that eport supports the results of those experiments. While in control zone of inhibition is in streptomycin 14mm and in tetracycline 12mm.

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*Corresponding Author

Sumia Fatima
Plant protection and Pesticides Research Laboratory, Dr. Rafiq Zakaria college for women, Aurangabad-431001 (M.S.), India

Tel: +91- 9765498686
Email: sumiazafar@gmail.com

Table 1. Antibacterial activity of *Acacia nilolica* against *Xanthomanas malvacaerum*

Plant part	Solvent used	Zone of inhibition in mm
Leaf	Water	4mm
	Ethyl alcohol	5mm
	Ethyl acetate	10mm
Bark	Water	6mm
	Ethyl alcohol	12mm
	Ethyl acetate	15mm
Root	Water	8mm
	Ethyl alcohol	14mm
	Ethyl acetate	18mm

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