Biospectra : Vol. 11(2), September, 2016, pp 59-60
An International Biannual Refereed Journal of Life Sciences

Plant Science

ISSN : 0973-7057

Antimicrobial activity in leaf extract of neem (*Azadirachta indica* Linn.) plant of Ranchi District, Jharkhand, India

Ishwari Prasad Gupta [a] and Arapna Sinha [b]
Post Graduate Department of Botany, Ranchi College Ranchi-834008

Received , 25th June, 2016; Revised: 19th August, 2016

Abstract : Antimicrobial activity in leaf extract of Azadirachta indica against, Staphylococcus aureus, Pseudomonas aeruginosa, Salmonella typhimurium, Antimicrobial activities of alcoholic extracts of Neem leaves were used. Varying concentration of each extracts 200 mg/ml, 150 mg/ml, 100 mg/ml, 50 mg/ml, 25 mg/ml prepared by using disc diffusion method. When compared with gentamycin200 mg and gentamycin 10 m, the methanol and ethanol extracts shows maximum inhibition on Pseudomonas aeruginosa and Staphylococcus aureus in an ascending order.

Keywords : Azadirachta indica, Staphylococcus aureus, Pseudomonas aeruginosa, Salmonella typhimurium.

INTRODUCTION

Neem is used in traditional medicine as a source f many therapeutic agents in the Indian culture and grows well in tropical countries. Its twig provide a chewing stick and are widely used in the Indian Sub continent, the purpose of the present study was to investigate the antimicrobial activity of Nee leaves against human pathogenic bacteria Pseudomonas aeruginosa, Salmonella typhimurium.

MATERIALS AND METHODS

Selection of Plant:- The plant Neem (Azadirachta indica) was selected for study. Its leaves were collected.

Leaf Extracts:- The completely shade dried leave were provided and allowed soxhlet for successive extraction with methanol and ethanol. The obtained liquid extracts were evaporated to dryness and stored at 40 C in air tight bottle.

Methanol Extract:- 50 g of dried leaf powder were taken in a separate container. To this 250 ml of methanol was added and kept for 24hrs with periodic shaking then filtered and the filtrate was collected. The procedure was repeated three times with fresh volume of methanol. The filtrates were pooled.

Ethanol Extract:- 50 g of dried leaf powder were taken in a separate container. To this 250 ml of ethanol was added and kept for 24 hrs with periodic shaking. Filtered and the filtrate was collected. The procedure was repeated three times. The collected filtrates were pooled.

Microorganism:- The pathogenic strains of Staphylococcus aureus, Pseudomonas aeruginosa, Salmonella typhimurium.

Agar disc diffusion method:- This method is suitable for organism that grows rapidly overnight at 35-370 C. The antibiotic impregnated disc absorbs moisture from the agar and antibiotic diffuses in to the agar medium. The rate of extraction of antibiotic from the disc is greater than the rate of diffusion. As the distance from the disc increases. There is a logarithmic reduction in the antibiotic concentration. Zone of inhibition of bacterial growth around each disc is measured.

Medium- 3.8 g of Agar is added to 100 ml distilled water and autoclaved at 1210 C for 15 minutes and passed in sterile Petri plates to a uniform thickness of approximately mm and the agar is allowed to set at ambient temperature and used.

*Corresponding author :
Phone: 9431326281
E-mail : ishwariprasadgupta@rediffmail.com

Inoculums:- The microorganisms were inoculated in peptone medium and incubated at 370 C for 3-4 hours and this was used as inoculums.

METHOD

A sterile cotton swab as inserted into the bacterial suspension and then rotated and compressed against the wall of the test tube so as to express the excess fluid. The surface of Agar plate was inoculated with the swab. The swab is passed three times over the entire over entire surface.

Methanol solvent to dissolve the plant extracts and then placed on the inoculated agar surface using sterile forceps.

Standard disc of Streptomycin (10 µg/ disc) and Tetracycline (30 µg/disc), 6mm in diameter were used as positive control and the solvent used for preparing extract was used as negative control. The plates were incubated overnight at 370 C for 18-24 hours. Antimicrobial activity was evaluated by measuring zone of inhibition by using Hi Media Zone Scale.

RESULT

Table 1

In-vitro activities of Neem leaves in Methanol extract against pathogens.

S.N.	Name of the organism	Gentamicin 200 mg (std)	Gentmicin 10 mg (std)	Methanol
1.	Staphylococcus aureus	14mm	08mm	12mm
2.	Pseudomonas aeruginosa	17mm	15mm	12mm
3.	Salmonella typhimurium	12mm	-	-

Table 2

In-vitro activities of Neem leaves in Ethanol extract against pathogens.

S.N.	Name of the organism	Gentamicin 200 mg (std)	Gentmicin 10 mg (std)	Methanol
1.	Staphylococcus aureus	14mm	08mm	12mm
2.	Pseudomonas aeruginosa	17mm	15mm	12mm
3.	Salmonella typhimurium	12mm	-	-

DISCUSSIONS

Many of the existing synthetic drugs cause various side effects. Hence, drug development plant based compounds could be useful in meeting this demand for never drugs with minimal side effects. Azadirachta indica leaves possessed good anti bacterial activity. The extracts of Neem when used as medicinal plant, could be useful for the growth inhibition of the bacterium. The phytoconstituents alkaloids, glycosides, flavonoids and Saponins are antibiotic principles of plants.

REFERENCES

1. Almas, K. Ansal Labi, T.R. (1995) The natural toothbrush. World health forum 16:206-210
2. Sonia Bajaj, Srinivasan B.P (1999) Investigation into the Anti bacterial activity of Azadirachta indica. Indian Journal of pharmacology 31:138-141.
3. Faiza Aslam, Khalil Ur. Rahman, Mohammad Asgar and Muhammad Sarwar (2009) Antibacterial activity of Various Phytoconstituents of Neem. Vol. 46 (3), 456-463.
4. Md. Mahshine Bhuiyan, Michiko Nishimura Seishi Matsumura and Tsutomu Shimono (1997) Antibacterial effects of the crude Azadirachta indica, Pediatric dental journal 7(1):61-64.