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ASSESSMENT OF ANTIMICROBIAL PROPERTIES OF HYDRO ALCOHOLIC EXTRACT OF *MORINDA CITRIFOLIA*

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ABSTRACT

Background: *Morinda Citrifolia* is a versatile medicinal plant with a broad spectrum of pharmacological activities and traditionally being used for the treatment of various diseases. Increasing emergence of resistance to the currently available antibiotic has necessitated continuing search for new antimicrobial compound. Hence, the present work was designed to investigate the antimicrobial activity of extract of Morinda citrifolia. **Objective**: To evaluate antimicrobial activity of Hydro alcoholic fruit extract of Morinda Citrifolia against E.coli, Psedomonas aeroginosa and Acinatobactor. **Material and Methods:** The Hydro alcoholic Extract of Morinda Citrifolia(Fruit) was purchased from Sanat Pharmaceutical, New Delhi. The extract was tested against standard strains and clinical isolate of E.coli, Pseudomonas aeroginosa and Acinatobactor by Agar well diffusion technique using Muller Hinton agar. Different concentration of test drug 1mg, 2mg, 4mg and 8mg were tested. Cefotaxime was used as control drug. **Results:** The Hydro alcoholic extract of Morinda Citrifolia at concentration of 1mg, 2 mg, 4mg and 8 mg were tested against three bacteria. E.coli (ATCC 25922) and E.coli from clinical isolate (Urine), were significant sensitive with test drug as compared with control drug. The Pseudomonas aeroginosa (ATCC 27853) and Pseudomonas aeroginosa of clinical isolate (Pus) were also significant sensitive by Test drug. Against, Acinatobactor from clinical isolate (Tracheal Secretion), the test drug did not demonstrate antimicrobial activity at 1 mg, while it showed significant activity at Conc. of 2mg,4mg &8 mg as compared with control drug. **Conclusion:** The herb Morinda Citrifolia was found to have significant antimicrobial properties against Test Bacteria.

KEYWORDS: Morinda Citrifolia, Antimicrobial, E.Coli, Psedomonas aeroginosa, Acinatobactor.

INTRODUCTION

Many ancient traditions including the Ayurveda, Siddha and the Unani systems of medicine have advocated the use of several herbal preparations like plant juices and extracts for diseases including infectious ones.[1] Almost 74% of the plant- derived medicines have a modern indication that correlates with their traditional, cultural and sometimes ancient uses. Hence, traditional medicine is an important source for the development of novel chemotherapeutic agents which are less toxic and more economic.[2]

Morinda Citrifolia is a versatile medicinal plant with a broad spectrum of pharmacological activities and traditionally being used for the treatment of various diseases. The plant *Morinda citrifolia L.* (Noni) (Rubiaceae) has been used in folk remedies by Polynesians, Indians for over 2000 years, and is reported to have a broad range of therapeutic effects, including antibacterial, antiviral, antifungal, antitumor, analgesic, hypotensive, anti-inflammatory, and immune enhancing effects.[3,4]

Increasing emergence of resistance to the currently available antibiotic has necessitated continuing search for new antimicrobial compound. Hence, the present work was designed to investigate the antimicrobial activity of fruit extract of Morinda citrifolia.

OBJECTIVE

To evaluate antimicrobial activity of Hydro alcoholic fruit extract of *Morinda Citrifolia* against Gram negative bacilli

1. E.coli,(ATCC)
2. E.coli from Clinial isolate (Urine)
3. Psedomonas aeroginosa (ATCC)
4. Pseudomonas aeruginosa from clinical isolate (Pus)
5. Acinatobactor, From clinical isolate (tracheal secretion)

MATERIAL AND METHODS

1. The Hydro alcoholic fruit Extract of Morinda Citrifolia(Fruit) was purchased from Sanat Pharmaceutical, New Delhi.

2. The bacterial strains tested included standard American Type Culture Collection (ATCC) strains of, *Escherichia coli and Pseudomonas aeruginosa*.
3. The bacterial isolates from various clinical samples of community acquired as well as nosocomial infections included gram negative bacilli (*Escherichia coli*, gram negative non fermenting bacilli (*Pseudomonas aeruginosa and Acinetobacter baumanni*).
4. The hydroalcoholic extracts were tested by agar well diffusion techniques as Wells of 10mm diameter were prepared in the plates with a sterile borer and 100 microlitres of the extract was pipetted directly into the wells to give final concentrations of 1mg, 2mg, 4mg and 8mg respectively.
5. The plates were incubated overnight at 37°C. Antibacterial activity was determined by measuring the diameter of the zones of inhibition of bacterial growth surrounding the wells with the extract.
6. The routine antibiotic Cefotaxime was used as control drug against test microorganism under similar condition.
7. The Study is conducted in Department of Pharmacology and Microbiology
8. The data was analyzed by using Microsoft excel 2007 and SPSS software to determine Average, SD and P value.

RESULTS AND DISCUSSION

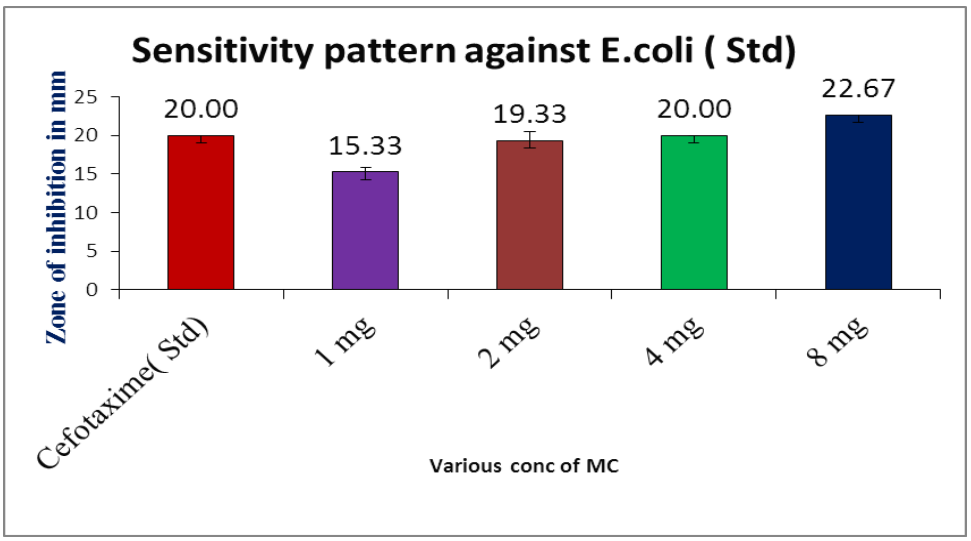

Fig 1 Shows: Sensitivity Pattern of Test Drug against E.Coli of ATCC

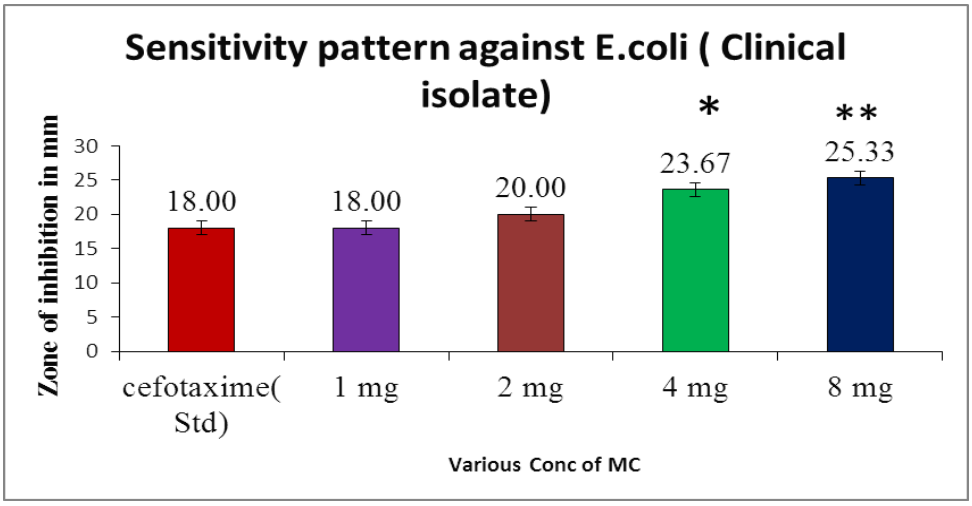

Fig 2 Shows: Sensitivity Pattern of Test Drug against E.Coli of Clinical isolate (*p<0.05, **P<0.01 vs Cefotaxime)

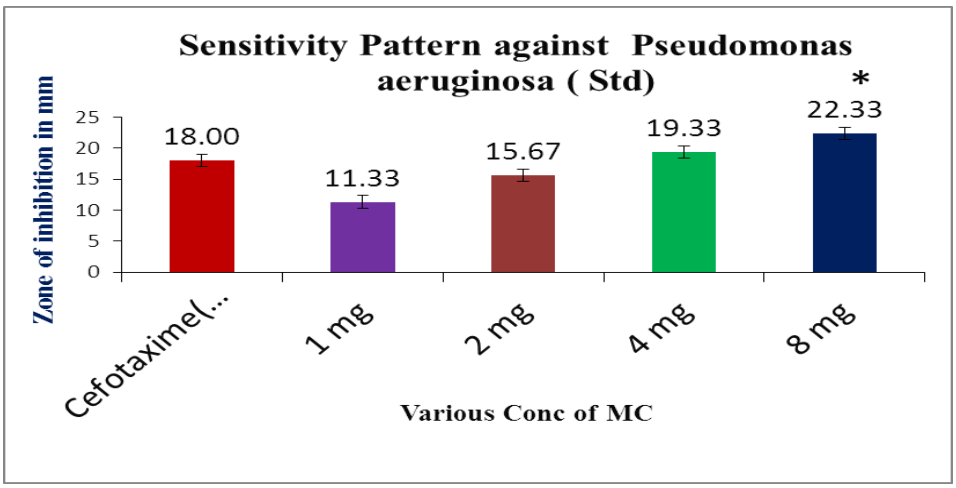

Fig 3 Shows: Sensitivity pattern of test drug against Psedomonas aeruginosa of ATCC (*p<0.05 vs Cefotaxime)

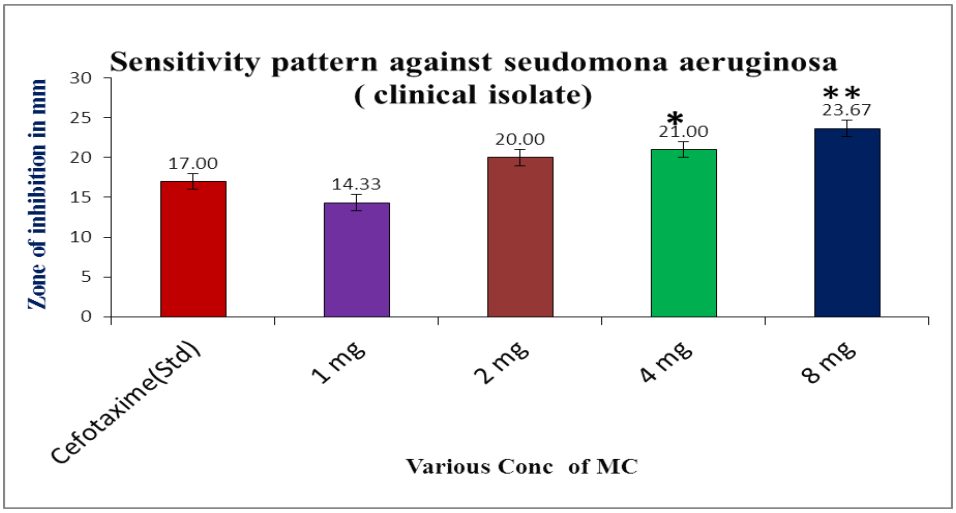

Fig 4 Shows: Sensitivity pattern of test drug against Psedomonas aeruginosa of Clinical isolate (*p<0.05, **P<0.01 vs Cefotaxime)

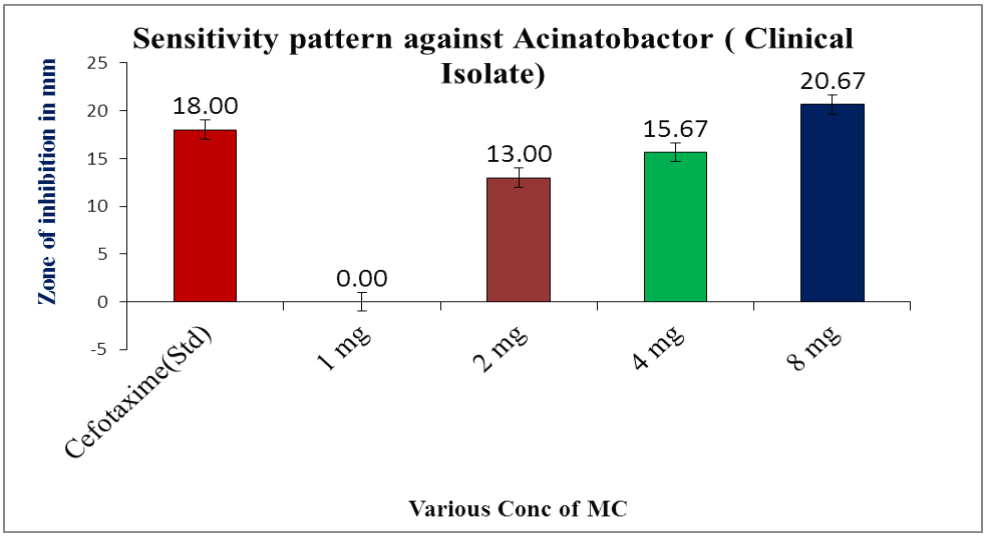

Fig 5 Shows: Sensitivity Patterns of test drug against Acinatobactor of Clinical isolate.

The Test drug Hydro alcoholic extract of *Morinda Citrifolia* was tested against various bacterial isolate compared with Standard ATCC type. The three reading of Inhibition zone was measured from separate plate given by test drug against bacteria were observed and average reading was taken for study. The test drug against E.coli was not seen significant as compared with Standard antibiotic Cefotaxime under similar condition but test drug showed significant results against E.coli from clinical isolate. Test drug in concentration of 4 mg and 8mg were showed significant results. It might be due variation of strain.

The test drug showed significant results against Pseudomonas aeruginosa of Standard (ATCC) and Clinical isolate strain. The test drug in concentration of 4 mg was significant against ATCC strain and 4 mg & 8mg were highly significant against strain of Clinical isolate.

The test drug also not significant against Acinatobactor of clinical isolate. However zone of inhibition was given by all concentration of test drug except 1 mg does not show zone of inhibiton against Acinatobactor.

However, in present study, zone of inhibition was comparable acceptable with standard antibiotic but 4 mg and 8 mg dose showed good results against E.coli and Pseudomanas species. Previous Similar Study conducted by khuntia et al[3] and p.selvan et al[4] showed good antibacterial activity of extract of Morinda Citrifolia against E.coli, They have not tested against Pseudomas and Acinatobactor.

CONCLUSION

As compared to standard Antibiotic, the herb *Morinda Citrifolia* demonstrated significant antimicrobial activity against

- E.coli from Clinical Isolate
- Pseudomonas aeroginosa from ATCC & as well as clinical isolate

As compared to standard Antibiotic, the herb *Morinda Citrifolia* demonstrated Comparable antimicrobial activity against

- E. Coli (ATCC)
- Acinatobactor (Clinical isolate)
- Synergistic activity can be studied with Standard Antimicrobial Drug.
- The Scope for dose reduction of standard antimicrobial drug in presence of adjuvant (Morinda Citrifolia) can be explored.

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