



Research Article

***In-vitro* Study of *Mollugo cerviana* Leaf Extract on *Staphylococcus* Sps. Isolated from mobile phones.**

E.Venkata Naga Raju*, G. Divakar

Department of biotechnology & microbiology, Acharya & B.M.Reddy college of pharmacy,
Soldevanahalli, hesaraghatta,
Banglor-560090

(Received: 18 August, 2012; Accepted: 24 August, 2012; Published: 29 August, 2012)

*Corresponding Author: Email: venkatanagarajue@gmail.com

ABSTRACT

Micro – organisms are omnipresent. Thus, the pages on which we pen down our imagination are also the habitat for these microbes, with this in mind ,we isolated micro – organisms from The mobile phones of students, staffs, workers and cleaners of our College, By using The cotton swabs. By gram – staining and observation under the microscope, Cocci were observed. On performing various biochemical tests such as catalase ,oxidase, starch hydrolysis, gelatin, we identified the organisms to be a species *staphylococcus* sps . Antibacterial test were performed in – vitro using *Mollugo cerviana* leaf extracts to study its role on the inhibition of this pathogen. A standard borewell method was employed.

Keywords- *Mollugo cerviana*, *Staphylococcus* ,Catalase test, Oxidase test, Mobile phones.

INTRODUCTION

Microorganisms like bacteria are omnipresent ,which exist either as Cocci or rods. Among the Cocci, *Staphylococcus* sps., *E.coli* sps., *Bacillus* sps. And *Diplobacillus* sps. are some common examples. *Staphylococcus* sps. is a gram-positive bacterium that appears as a grape like clusters¹. The *Staphylococcus* genus has about thirty-three species. Most of them are harmless and reside normally on the skin and mucous membranes of humans and other organisms. Also found worldwide, they are a small component of soil microbial flora. *Staphylococcus* can cause a wide variety of diseases in humans and other animals through either toxin production or invasion. Toxins from this organism is a common cause of food poisoning², When food is improperly stored.

Mollugo cerviana (Molluginaceae) is an ancient medicinal plant known as threadstem carpetweed native to India, Sri Lanka, Pakistan and Bangladesh. Common folk in India uses this plant for healing skin diseases. *Mollugo cerviana* is an indigenous medical plant. It has been prescribed in Ayurveda as an alterative, treatment of various ailments like rheumatism, piles fever, skin diseases and snake bite¹⁴. while the leaf, stem, and root extracts of this plant are important in the management of various ailments.

MATERIAL AND METHODS

Materials

Petridish, cotton swabs, boiling tube, NA media , gelatin, iodine, inoculation, alcohol, spirit lamp,etc.

Method

Using basics concepts of microbiology. We prepared agar media, blood agar media as a nutrient media (S.S.FINECHEM. LIMITED, MUMBAI.)bacteria needs agar media i.e. Na media for its growth .Now we isolated the bacteria by swabbing with the cotton swabs on the mobile phones and applied it on NA media plate .Now we incubated it for 18 hour at 37⁰C and we observed white coloured colonies on NA media plates .We sub cultured the already prepared bacteria and thus we obtain NA media plate containing a pure culture. we did gram staining using the gram's iodine , crystal violet stain , saffranin , alcohol and bacterial pure culture and we performs biochemical test such as starch hydolysis , gelatin test , indole test , methyl red test , catalase test and oxidase test.

Observation:

The results for various biochemical tests are given in the table:1

Table 1: Results of various biochemical tests

Tests	Inference
GRAMS STAINING	+
STARCH HYDROLYSIS	-
GELATIN HYDROLYSIS	+
INDOLE TEST	-
CATALASE TEST	+
OXIDASE TEST	+
METHYL RED TEST	+

Note: Gram – staining and biochemical tests indicated that the micro -organism was *Staphylococcus* sps

Figure 1: Bacterial Culture

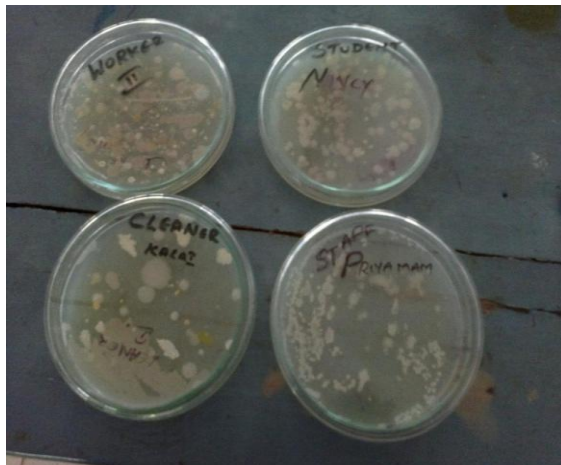


Figure 2: Pure Bacterial Culture



Figure 3: Gram staining of *staphylococcus* species (gram positive cocci)

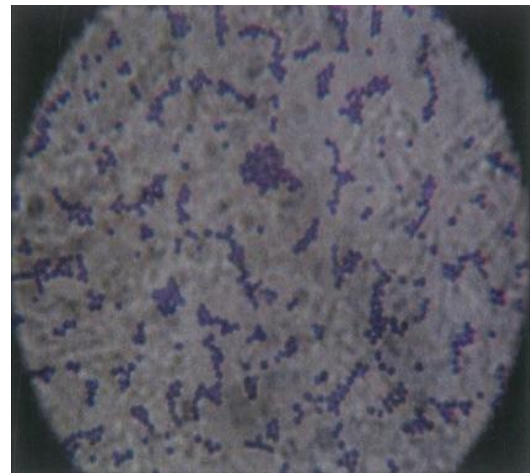


Figure 4: Oxidase Test(A is Positive)

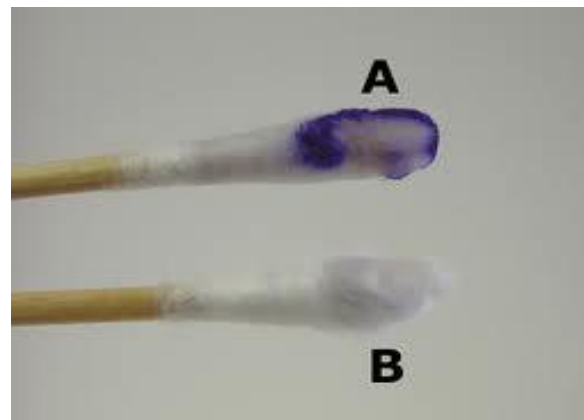


Figure 5: Catalase test(Bubbles indicates positive)



Figure 6: Starch hydrolysis test



Figure 9: Indole test(negative)



Figure 7: M.R Test(pink colour indicates positive)

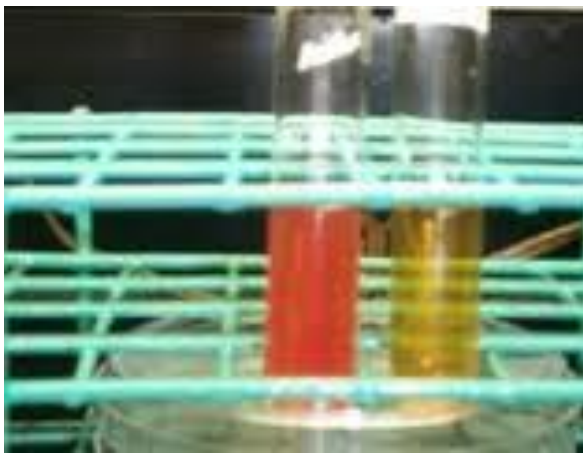


Figure 10: Crude Juice of *Mollugo cerviana*



Figure 8: Gelatin test(slant liquid indicates positive)



Figure 11: Anti bacterial test



RESULT

The bacteria which were isolated from mobile phones were found to be Cocci. These were confirmed to be *Staphylococcus* sps. Based on biochemical tests such as catalase, oxidase, methyl red and gelatine test which were positive, whereas the starch hydrolysis and indole tests showed a negative results, this confirms the presence of *Staphylococcus* sps. The antimicrobial effect using the crude extract of *Mollugo cerviana* was conducted. Crude extract which was extracted from organic solvent showed an antibacterial property against pathogenic bacteria.

DISCUSSION AND CONCLUSION:

We concluded that the organism isolated from the mobile phones was found to be *Staphylococcus*, in-vitro antibacterial tests using a crude juice of *Mollugo cerviana* on *Staphylococcus* showed a clear zone of inhibition. Pathogenic bacteria like *Staphylococcus* can cause a wide variety of diseases in humans and other animals through either toxin production or invasion. Staphylococcal toxins are a common cause of food poisoning, as it can grow in improperly-stored food. In year 2009 scientist I.H. Kilic observed mobile phone can spread infectious diseases by its frequent contact with hands. Our study concludes that this 'medicinal plant' showed an antibacterial property against pathogenic bacteria.

Acknowledgement:

Management and all staffs of Acharya & B.M. Reddy College of Pharmacy for providing the all informations and necessary facilities needed for the research.

REFERENCES

- Allen, J. L.; Cowan, ME, and Cockroft, PM., 1994 Comparison of three semi-selective media for isolation of methicillin-resistant *Staphylococcus aureus*. *J. Med. Microbiol.* **1994**;40[2]: 98-101.
- Banerjee S. N.; Emori T.G.; Culver D. H.; Gaynes RP, Jarvis W. R., Horan T. Secular trends in nosocomial primary bloodstream infections in the United States, *Am. J Med.* **1991** ;91:86-89.
- Bauer, A.W.; Kirby, M. and Sherris, J. S.. Antibiotic susceptibility testing by standardization signal disc method. *Am. J. Clin.* **1966**;10: 493-496.
- Boyce, J.M. Preventing Staphylococcal infections by eradicating nasal carriage of *Staphylococcus aureus*. *Infect. Control Hosp. epidemiol.* **1996** ;17(12):1-8
- Duckworth, G.J., Diagnosis and management of methicillin-resistant *Staphylococcus aureus* infection. *B. M. J.* **1993**;307:1049- 1052.
- Francais F. The Canadian nosocomial infection of the first 18 months of surveillance of Methicillin-resistant *Staphylococcus aureus* in Canadian hospital. *Canadian communicable Disease Report.* **1997**;23(6); 23-26.
- Loir, Y. L.; Baron, F. and Gautier, M. *Staphylococcus aureus* and Food poisoning. **2003**; P:63-76.
- Maniatis, T.; Fritsch, E. F. and Sambrook, J. Molecular cloning: A Laboratory Manual Cold Spring Harbor Laboratory, New York. **1982**; P: 150-160.
- Ojeniyi, B. Polyagglutinable *P. aeruginosa* from cystic fibrosis patients. A survey. *APMIS- sup.* **1994**;46:1-44.
- Renders, N.; Romling, U.; Verbrugh, H. and Belkam, A. Comparative typing of *P. aeruginosa* by random amplified polymorphic DNA or pulsed field gel electrophoresis of DNA Macrorestriction fragments *J. Clin. Microbiol.* **1996**;34(12): 3190- 3195.
- Roeder V. and Broda, P. Rapid preparation of DNA from filamentous fungi. *L. Appl. Microbiol.* **1987**;1:17-20.
- Sambrook, J.; Fritsch, E.F. and Maniatis, T. Molecular Cloning: A Laboratory manual. New York, U.S.A. **1989**; P:160-172.
- S. Zillur Rahman and M. Shamim Jairajpuri. Neem in Unani Medicine. Neem Research and Development Society of Pesticide Science, India, New Delhi, February **1993**; p:208-219.
- PS Pavithra and VS Janani, Antibacterial activity of plants used in Indian herbal medicine. *International journal of green pharmacy.* **2010**;4(1):22-28.

15. I.H. Kilic, M. Ozaslan, I.D. Karagoz, V. Davatoglu., The microbial colonisation of mobile phones used by health care staffs, *Pakistan journals of biological science*. **2009**;78:882-884.
16. D.N. Tagoe, GyandeVik, Ansah Evo. Bacterial contaminant of mobile phones. *Central microbiology journal*, **2011**;65:121-125.
17. T. Jayachandra, A. Lakshmi Prassana, A. Venkateshwara Rao., (), A study on isolation and identification of bacteria causing nasocomial infection on mobile phones of health care worker. *Calicut medical journal*, 2011; 5:1-6.