INTERNATIONAL JOURNAL OF ADVANCES IN PHARMACY, BIOLOGY AND CHEMISTRY

Research Article

In-vitro Study of *Azadirachta indica* Leaf Extract on Staphylococcus Sps. Isolated from old books

EVN. Raju* and G. Divakar

Department of Biotechnology & Microbiology, Acharya & B.M.Reddy College of Pharmacy, Soldevanahalli, Hesaraghatta, Bangalore, Karnataka, India.

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 a very old book of 15 years from our College library. 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 *Azadirachta indica* leaf extracts to study its role on the inhibition of this pathogen. A standard borewell method was employed.

Keywords: *Azadirachta indica* , Staphyloccocus ,Catalase test, Oxidase test, Old books.

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 clusters. 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 poisoning, When food is improperly stored.

Azadirachta indica **(***Meliaceae).* is an ancient medicinal plant native to India Sri Lanka Pakistan and Bangladesh.Common folk in India uses this plant for healing skin diseases. *Azadirachta indica* is an indigenous medical plant. It has been prescribed in Ayurveda as an alterative, anthelmintic, dyspeptic, digestive, tonic, analgesic in eye and ear diseases, and in the treatment of irregular menstruation and asthma. In Cameroon, the whole plant is used in oral re-hydration, while the leaf, stem, and root extracts of this plant are important in the management of various ailments.

MATERIALS AND METHODS

MATERIALS

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

METHODS

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 from middle of the book and applied it on NA media plate .Now we incubated it for 18 hour at 37^0C 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 performes 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

RESULTS

The bacteria which were isolated from old books 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 *Azadirachta indica* was conducted. crude extract which was extracted from organic solvent showed a antibacterial property against pathogenic bacteria.

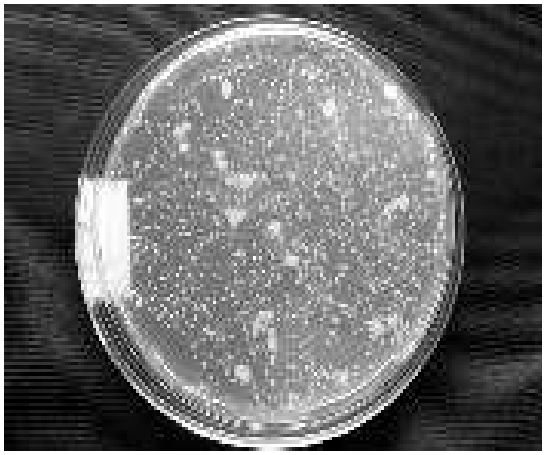

Fig. 1: Bacterial Culture

CONCLUSION AND DISCUSSION

We concluded that that the organism isolated from the old books was found to be Staphylococcus in-vitro antibacterial tests using a crude juice of *Azadirachta indica* on Staphyloccus 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 1964 two scientist namely Evenleigh and Brewer observed bacteria isolated from old papers from Canadian paper Mill. Our study concludes that this 'medicinal plant' showed a 'antibacterial property against pathogenic bacteria .

Fig. 2: Pure Bacterial Culture

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.

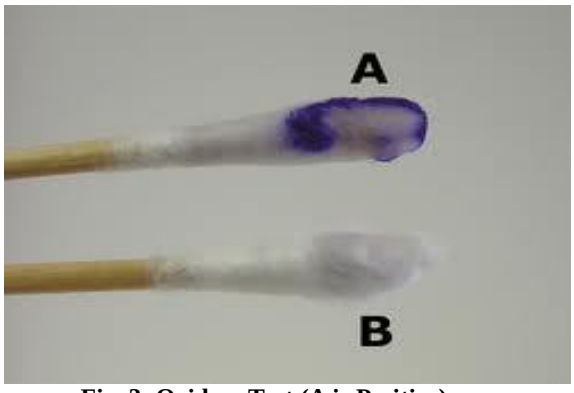

Fig. 3: Oxidase Test (A is Positive)

Table 1:

Tests	Inference
Starch Hydrolysis	-ve
Gelatine Hydrolysis	+ve
Indole Test	-ve
Catalase Test	+veee
Oxidase Test	+ve
Methyl Red Test	+ve

Note : Gram – staining and biochemical tests indicated that the Micro -organism was Staphyloccous sps**.**

Fig. 4: Catalase test (Bubbles indicates positive)

Fig. 5: Starch hydrolysis test

Fig. 6: M.R Test (pink colour indicates positive)

Fig. 7: Gelatin test (slant liquid indicates positive)

Fig. 8: Indole test (negative)

Fig. 9: Crude Juice of *Azadirachta indica*

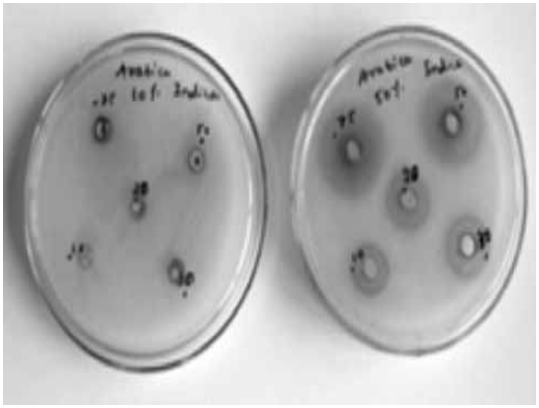

Fig. 10: Anti bacterial test

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