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Pigment Production of Pathogenic Bacteria Using Randia Longispina

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Abstract--The present investigation is aimed to carry out the pigment production of pathogenic bacteria using Randia longispina against some bacterial species. Anti proliferative activity was evaluated by R. longispina seed extracts. The seed extracts (chloroform, methanol, hexane and petroleum ether) were used as solvents in order to get the seed extracts. Methanol extract was showed very less anti proliferative growth occurred than other extract and significantly the seed extract treated bacteria, produced pigment, which mostly inhibited, when treated with different carbohydrates on bacteria Salmonella typhi and Shigella dysentriae.

Keywords--Anti proliferative activity, Pathogenic activity, Solvent, Pigment, Extract

I. INTRODUCTION

Now a day's multiple drug resistance has developed due to the indiscriminate use of commercial antibacterial drugs commonly used in the treatment of infectious diseases. In addition to this problem, antibiotics are sometimes associated with adverse effects on the host including hypersensitivity, immune suppression and allergic reactions. This situation forced scientists to search for new antimicrobial substances. Given the alarming incidence of antibiotic resistance in bacteria of medical importance, there is a constant need for new and effective therapeutic agents, Therefore, there is a need to develop alternative antimicrobial drugs for the treatment of infectious diseases from medical plants (Agarwal *et al.*, 1996). Antimicrobials of plant origin have enormous therapeutic potential. They are effective in the treatment of infectious diseases while simultaneously mitigating many of the side effects of plant materials typically result from the combinations of secondary products present in the plant. In plants, these compounds are mostly secondary metabolites such as alkaloids, steroids, tannins and phenol compound, flavonoids, resins, fatty acids gums which are capable of producing definite physiological actions on body. The use of plants and plant products as medicines could be traced as far back as the beginning of human civilization. Herbal medicine is still the main stay of about 75%-80% of the whole population, and the major part of traditional therapy involved the use of plant extract and their active constituents (Akerele, 1993). In India system of medicine, *Randia longispina* is an important medical plant and popularly known as emetic nut. It is found in waste places and jungles all over India. Literature survey reveals that the fruit is bitter, sweet, heating aphrodisiac, emetic, purgative, cures diseases, ulcers, inflammations, wound, tumors, skin diseases and have antibacterial activity. The pulp of fruit is believed by many practitioners to have antihelminthes properties and also used as an abortifacient as folklore remedy (Agarwal and Singh, 1999).

II. MATERIALS AND METHODS

A. Collection of Seeds

The *Randia longispina* seed were collected from Kanyakumari forest area, Tamil Nadu, India. After collection, the seed were brought to the laboratory and chopped into small pieces. Then the seed extracted the bioactive compound using the suitable solvents.

B. Extraction of Bioactive Compound

10 gram of seed was homogenized with solvent by constant stirring at room temperature. The suspension was filtered, the liquid solvent was under drying. The obtained extracted powder was stored at -20^0C.

C. Anti-Proliferative Assay

The seed extracts were separately added into various species of log phase pathogens inoculated nutrient broth. The inoculated broths were incubated at 24 hrs for 37^0C. After incubation the bacterial turbidity was carefully removed, and it's light absorbed at 620 nm.

Finally the result was tabulated.

D. Growth Of Pathogenic Activity Against Plant Extract

According to this method the seed extracts inoculated pathogenic bacteria cultures were centrifuged at 10,000 rpm for 15 min. After centrifugation the pellet only collect and streaked on surface of the specific pathogenic bacteria petri plates. Then the plates were incubated at 37^0C for 24 hrs and finally the result was noted.

III. RESULT AND DISCUSSION

The inhibition produced by the plant extract against particular organism depends upon various extrinsic and intrinsic parameters. *Bacillus* ceruse is a food borne pathogenic bacteria observed food products. *Melastoma candidum* acetone extract had an inhibitory effects on food borne pathogenic bacteria in different food model systems (Wang and Hsu, 2007). Methanol, ethanol and acetone separately or mixed with water are commonly used to extract bioactive compounds from plant materials, depending on the intended use of the extract. Methanol and water were chosen as extraction solvents because ethanol/water formulations are relatively safe for human consumption as compared with other organic solvents, such as acetone or methanol frequently used by researchers. Further, ethanol extraction is widely used to obtain crude extracts of phytochemicals from plant materials in the herbal medicine industry for therapeutic applications.

Table: Pigment production of pathogenic bacteria using *R. longispina* against some bacterial species

Name of the pathogens	Pigment color
Vibrio parahaemolyticus,	No color
Salmonella typhi,	Black color
Pseudomonas aeruginosa,	No color
Escherichia coli	No color
Shigella dysentriae	Black color

In the present study the growth of pathogenic activity against *Vibrio parahaemolyticus, Salmonella typhi, Pseudomonas aeruginosa, Escherichia coli* and *Shigella dysentriae* used different solvent seed extracts (chloroform, methanol, hexane, and petroleum ether) methanol aqueous extract even at lower concentration, but in case of nutrient media growth of all the five pathogens occurred but in well flourished level. Growth was observed for all the five pathogenic bacteria. But very less growth occurred. The seed extract treated bacteria, produced pigment, which mostly inhibited, when treated with different carbohydrates on bacteria *S. typhi* and *S. dysentriae*. The maltose act as a specific role in the coloured substance formation. This is due to presence of hydrophobic region next to monosaccharides binding site of fimbriae (Sharon *et al.*, 2005). In the present study, the pathogenic activity against seed extracts on specific and nutrient medium. The results showed that *S. typhi* and *S. dysentriae* produced black colour pigment and bad odor . In contradiction, *P. aeruginosa* produces a variety of redox active compounds including pyocyanin, phenazine, carboxamide. The *P. aeruginosa* can grown on LB agar plate after 24 hours and several single colonies were obtained. After, the bacterium grown in King's agar liquid medium at room temperature, the blue-green solution was appeared preliminarily indicating one of phenazine derivatives production that was pyocyanin. The pigment were tested an antibacterial activity agent *Escherichia coli* and *Xanthomonas campestris* (Kanda *et al.*, 2009).

IV. CONCLUSION

The present study investigate that the *Randia longispina* was inhibit the production of pigment and high anti proliferative activity against *Salmonella typhi*. In the future, *R. longispina* may be use in clinical and textile industry.

V. ACKNOWLEDGEMENT

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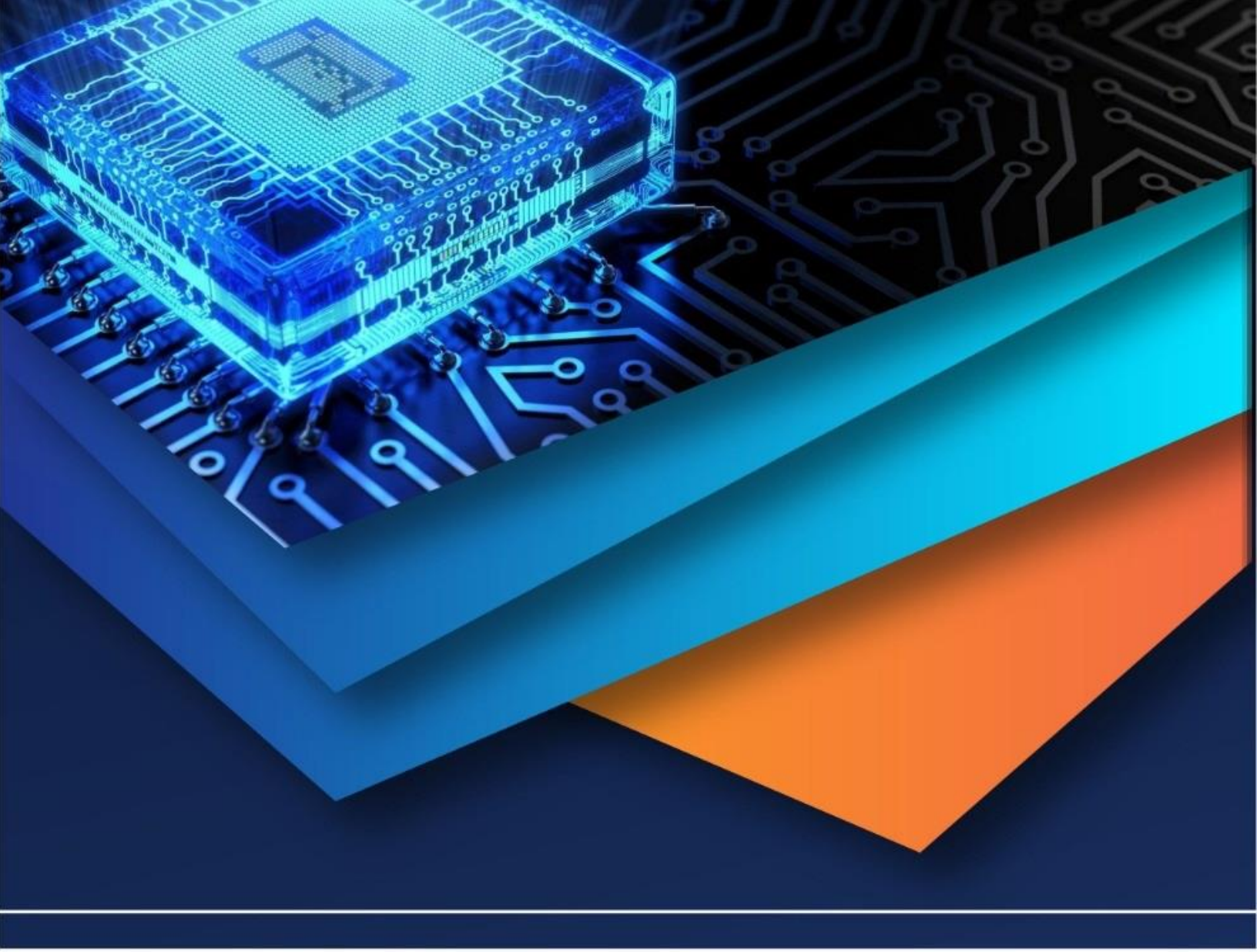

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