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Review Article

Antibacterial Activity of *Barringtonia acutangula*(L.) Gaertn

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ABSTRACT

Liver is a vital organ play a major role in metabolism and excretion of xenobiotics from the The in-vitro antibacterial potential of *Barringtonia acutangula*(L.)Gaertn. Leaves extracts in Petroleum ether, Ethyl acetate and Ethanol were screened against Pseudomonas aeruginosa, Klebsiella pneumonia, Salmonella typhi and Salmonella paratyphi A. The Ethanolic extract of the leaves of *Barringtonia acutangula* showed maximum antibacterial potential followed by Ethyl acetate extract and Petroleum ether extract when tested by Agar Disc Diffusion Method.

Keywords: Antibacterial activity, *Barringtonia acutangula*(L.) Gaertn., Pathogenic microorganism.

Plant based medicaments have been man's prime therapeutic weapons to rescue him from the clutches of diseases[1]. Virtually all cultures worldwide have been relied historically, or continue to rely on medicinal plants for primary health care[2]. In recent years, multiple drug resistance in human pathogenic microorganism has been develops due to indiscriminate use of commercial antimicrobial drugs commonly used in the treatment of such diseases[3]. To overcome the growing problem of antibiotic resistance plant based antibiotics are of great interest. There are reports about antimicrobial activities from *Barringtonia acutangula* roots and Stembark[4]. But no study about the antibacterial activity of leaves of *Barringtonia acutangula* (L.) Geartn. of Indian origin. The present study aimed at evaluating the in-vitro antimicrobial activity of Petroleum ether, Ethyl acetate and Ethanol extract of *Barringtonia acutangula* leaves against pathogens like Pseudomonas aeruginosa, Klebsiella pneumonia, Salmonella paratyphi A and Salmonella typhi.

Fresh leaves of *Barringtonia acutangula* (L.) Gaertn. (Lecythidaceae) collected from Presidency College premises, Chennai, TamilNadu. The plant was identified[5], confirmed and authenticated (PARC/2007/72) by comparing with an authentic specimen by a botanist Dr. P. Jayaraman, Plant Anatomical Research Centre, Tambaram, Chennai.

For the preparation of extracts leaves were shade dried for 15days and grounded into powder by Hammer mill. The selected plant part (300gm) was successively extracted with Petroleum ether, Ethyl acetate and Ethanol using Soxhlet apparatus for 16hours. The respective solvents were evaporated and concentrated. The dried weight of each extract was used to detrmine the concentration in mg/ml. Extracts were stored in refrigerator and were suspended in DMF (Dimethyl Formamide) prior to use[6].

Four pathogenic bacterial strains used in this study were Pseudomonas aeruginosa, Klebsiella pneumonia, Salmonella paratyphi A, Salmonella typhi. The text cultures were

obtained from Madras Medical College, Chennai, India. Few colonies of the bacterial strains selected for study were picked from the agar slopes and inoculated into 4ml peptone water in a testtube. These tubes were incubated for 2-4 hrs to produce suspensions. The suspensions were then diluted, if necessary with saline to density visually equivalent to that of standard prepared by adding 0.5ml of 1% Barium chloride to 99.5ml of 1% H_2SO_4. These suspensions were used for screening.

The Agar Disc Diffusion method was used for the antibacterial study[7]. This discs of 6mm diameter were prepared from Whatmann filter paper no.1 and were sterilized in hot air oven at 160°C for 1 hour. The discs were then impregnated with the extract and solvent DMF. Ciprofloxacin discs were used as standard. Each discs of Ciprofloxacin contained 5µg. The pathogenic strains were then seeded on the Muller Hinton Agar Media in a petridish by streaking the plate with the help of a sterile swab. Care was taken for the even distribution of culture all over the plate. The seeded plates were allowed to dry and then Ciprofloxacin, extracts and DMF discs were placed on the seeded medium plates and maintained at 4°C for 30mts to allow perfusion of drugs being tested. The plates were then incubated at 37°C for 24hours. After which the zones of growth of inhibition were measured and recorded in millimeter. The negative and positive control was set up in a similar manner except that the extract was replaced with sterile DMF and commercial antibiotic (Ciprofloxacin) respectively (Table 1).

There is no dependence on traditional medicine for a variety of ailments in a large part of the world population, especially in developing countries; the use of higher plants and preparations made from them to treat infections is a longstanding practice[8]. However many species of plants containing substances of medicinal value have yet to be discovered[9]. The present study reveals the antibacterial potential of various extracts of leaves of *Barringtonia acutangula* (L.) Gaertn. All extracts have shown inhibitory effect against the bacterial test strains (Table 1). The ethanolic extract showed maximum antibacterial potential followed by Ethyl acetate and Petroleum ether when tested by Agar Disc Diffusion Method. Phytochemical elucidation of antibacterial principles especially the Ethanol fraction should be undertaken with the objective to isolate the active biochemical principles and develop novel antibacterial agents.

Table 1: Antibacterial activity of *Barringtonia acutangula* (L.) Gaertn. Leaves extracts on different bacterial strains

S.No.	Microorganism	Diameter of Zone of Inhibition(mm)				
		Pet. Ether Extract (mg/ml)	Ethyl actetate extract (mg/ml)	Ethanol extract (mg/ml)	Ciprofloxacin (mg/ml)	DMF
1.	Pseudomonas aeruginosa	9	10	12	13	-
2.	Klebsiella pneumonia	8	9	12	14	-
3.	Salmonella typhi	12	12	13	13	-
4.	Salmonella paratyphi A	-	11	11	15	-

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