



## Antibacterial Activity of Leaf and Root of *M. pudica* L. against Selected Human Pathogenic Microorganisms

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### Aim:

*Mimosa pudica* L. is a significant restorative plant and it has customary therapeutic worth. The current examination was expected to research the antibacterial action of leaf and foundation of *M. pudica* against chosen microorganisms *Escherichia coli*, *Klebsiella pneumoniae*, *Proteus mirabilis*, *Bacillus subtilis*, *Pseudomonas fluorescens* and *Streptococcus pyogenes* by plate dispersion strategy. The solvents  $\text{CH}_3\text{CO}$ , fluid, benzene, diethyl ether and ethanol were utilized for the planning of concentrates from leaf and base of *M. pudica*. In the current examination, different convergences of concentrates 2.5 mg/50  $\mu\text{l}$ , 3.75 mg/75  $\mu\text{l}$  and 5 mg/100  $\mu\text{l}$  were utilized and arranged circles separately for the assurance of antibacterial action against chosen bacterial species. The readied circles were put on each petriplate with particular bacterial species alongside control dimethyl sulfoxide (DMSO) and standard nitrofurantoin circles and afterward the plates were brooded at 37° C for 24 hrs. After brooding period, the widths of zones conformed to the plates were estimated. The antibacterial movement of leaf and foundation of *M. pudica* was in the reach between  $08 \pm 0.2$  mm and  $26 \pm 0.5$  mm. Among the tried fixations, 5 mg of both leaf and root removes showed greatest antibacterial action than different focuses 2.5 and 3.75 mg. The greatest degrees of zone of restraint were seen in benzene leaf extricate against *S. pyogenes*  $26 \pm 0.5$  mm, *E. coli*  $25 \pm 1.2$  mm and *K. pneumoniae*  $25 \pm 0.8$  mm. The base degree of zone of restraint was seen in  $\text{CH}_3\text{CO}$  root remove against *E. coli*  $08 \pm 0.2$  mm and *P. mirabilis*  $08 \pm 0.6$  and watery leaf extricate against *K. pneumoniae*  $08 \pm 0.7$  mm. Least inhibitory focus (MIC) of concentrates of leaf and foundation of *M. pudica* against chosen bacterial species were likewise decided at various levels dependent on the tried microorganisms. The aftereffects of this examination affirmed that the antibacterial movement of leaf and foundation of *M. pudica* against chosen bacterial species and it very well might be hotspot for the revelation of novel antimicrobial mixtures.

### Introduction:

Plants contribute strongly to fulfil necessities of life such as food, medicine, clothing, and construction. The World Health Organi-

zation has catalogued 20,000 plant species studied for medicinal purposes. Medicinal plants represent a rich source of antimicrobial agents. Plants are used medicinally in different countries and source of many potent and powerful drugs. Plants synthesize secondary metabolites which include alkaloids, flavonoids, saponins, terpenoids, steroids, glycosides, tannins and volatile oils. The therapeutic efficacy of plants is because of these secondary metabolites for curing many diseases. Phytochemicals are pharmacologically active compounds such as alkaloids have antispasmodic, antimalarial, analgesic and diuretic activities, terpenoids possess antiviral, anthelmintic, antibacterial, anticancer, antimalarial and anti-inflammatory properties, glycosides have antifungal and antibacterial properties, phenols and flavonoids have antioxidant, antiallergic and antibacterial properties and saponins possess anti-inflammatory, antiviral and plant defence activities. For a long period in history, plants have been valuable and indispensable sources of natural products for the health of human beings and they have a great potential for producing new drugs. The World Health Organization (WHO) recommends world-wide development of research on medicinal plants for therapeutic purposes, in order to obtain new possibilities for the treatment of diseases, especially in developing countries. The collected plants were brought into the laboratory and washed thoroughly in running tap water to remove the soil particles and adhered debris and then finally washed with sterile distilled water. The leaf and root of *M. pudica* were separated and dried under shade for 10 days at room temperature. Then the plant materials were pulverized into powder. The powdered materials were stored in air tight containers until the time of use.

### Conclusion:

From the results of this study, we concluded that the acetone, aqueous, benzene, diethyl ether and ethanol extracts of leaf and root of *M. pudica* possess potential antibacterial activity against human pathogens *Escherichia coli*, *Klebsiella pneumoniae*, *Proteus mirabilis*, *Bacillus subtilis*, *Pseudomonas fluorescens*, and *Streptococcus pyogenes*. The MICs of different concentrations of different solvent extracts of leaf and root of *M. pudica* were also studied. The leaf and root extracts of *M. pudica* can be tested on other human pathogens to elucidate and ascertain their uses. Recent now there are emerging many multidrug resistant human pathogenic bacteria. *M. pudica* is commonly found in waste lands of India at moisture condition. The collection and cultivation of this medicinal plant is easy with low cost. The leaf and root of *M. pudica* may be an alternative drug for synthetic antimicrobial agents. In near future, the isolation of antimicrobial compounds from the leaf and root of *M. pudica* would be useful to treat infectious diseases caused by microorganisms. So, the extensive research should be carried out on phytochemicals of *M. pudica* for the development of cost effective drugs.