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Antibacterial Activity of Various Extracts of Seeds of the Plant Malva Parviflora (LINN)

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Abstract

The present study was aimed to study, the antibacterial activity of the seeds of various seed abstract of plant Malva Parviflora (Linn) the antibacterial activity of plant extract was determine by using paper disc diffusion method and MBC (minimum bactericidal count) by using micro dilution method all the extract shows the significant activity against the micro organism hence these extract may be used as a source of antibacterial agent obtained from herbal medicine and may be explore as new and effective antibacterial agent.

Various solvent extracts of the plant Malva parvifiora (Linn) have been found to possess enough antibacterial activity and may potentially be explored as human antibacterial agent.

Keywords: Malva parviflora (Linn), natural order, Malvaceae, seeds, antibacterial activity, MBC, zone of inhibition.

INTRODUCTION

Plants with medicinal properties have been known for thousands of years and have been used as traditional medicine by the people to treat diseases. Due to many side effects of drugs of medical science and their high cost, the traditional medicines are being used all over the world. Botanically derived medicines have played a major role in human society throughout history and prehistory.

The use of plant and its product has a long history that began with medicine through the year has been incorporated into medicine. Many plant species reported to have pharmacological properties as they are known to posses various secondary metabolites like glycosides saponins, flavonoid, steroids, tannins, and alkaloid. Which is therefore should be utilizes to combat the disease causing pathogen.

The plant of Malva parviflora (Linn) belongs to the natural order Malvaceae. It is commonly known as Panirak. It's seeds are reported to be useful in cough and for treating ulcers in the bladder. It commonly occurs in Bombay, Uttar Pradesh, upper Bengal, Mysore and Hadura. The plant seeds was shade dried, powered and extracted petroleum ether to alcohol in increasing polarity in the soxhlet apparatus for about 70 hrs at (40-60c). The extraction was concentrated to get a viscous mass. This was subjected for the analysis of antibacterial activity in different solvent with bacterial strains.

After showing literature its medicinal important and the extraction process of the compound the present protocol has been outlined regarding the antimicrobial activity on these selected plant compound using different extract. It is in view of this, that the present research was the set up to evaluate the antibacterial activity of seeds of the plant malva parviflora using different plant extraction against bacteria.

EXPERIMENTAL METHOD

1. Selection of medicinal plant: - Seeds of medicinal plant Malva Parviflora (Linn) was collected from the Bombay and the upper Bengal in curing several aliment and for treatment of ulcer in the bladder.

2. Extraction Process: -The dried and finely powdered seeds of Malva parviflora (Linn) were successively extracted in a soxhlet extractor with different solvents of increasing polarity from petroleum ether (40-60) to absolute alcohol. The solvents were distilled off under reduced pressure and the extracts were dried in a desiccator.

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3. Culture medium: - In order to determine the antibacterial activity, the "oxide nutrient broth" was used to prepare to inoculums, where as the media was prepared by the addition of 2.5% agar to oxide nutrient broth.

4. Micro Organism use for test: - The bacterial strains used for

antibacterial screening were.

(a) Staphylococcus albus, (b) Bacillus anthraces, (c) Bacillus pumilis, (d) Bacillus subtils, (e) Vibrio cholera, (f) Xanthomnas compestris, (g) Xonthomonas malvacearum.

5. Media preparation and its sterilization: - The suspension culture, for bacterial cell growth 2.4% w/v cell growth was taken form evolution. All media prepared was then sterilized and autoclaving the media at 125^0 C. for 20 minutes.

6. Paper disc diffusion method: - The paper disc diffusion[2,3] plate method[4] was employed for the determination of antibacterial activity. Strongly absorbent paper was employed for the assay of penicillin and other antibacterial substances. The solutions of different solvent extracts were prepared in ethylene glycol and the discs were then placed over seeded medium and incubated for 35 hours at 30^0 C. The diameter of inhibition zone (mm) was measured and activity was calculated Triplicate were maintained and the was repeated for each pelicates the reading were taken in three different direction and the average value was recorded.

7. Determination of MBC: - The MBC was determined by serial sub-cultivation of 2u1 into micro liter plates containing 100ul of broth per well and further incubation 72hours at 28°c. The lowest concentration with no visible growth was defined as MBC, indicating 99.5% killing of the original inoculurns. The reading was taken and compared with the standard streptomycin for bacteria as the positive controls. All the experiments were performed in duplicate and repeated three times.

In the similar way, controls were run with 500 ppm, solution of acromycin and streptomycin against gram positive and gram negative bacteria separately.

OBSERVATIONS

In the present investigation, the inhibitory effect of different extracts (Petroleum ether, Benzene, Solvent Ether, Acetone, Chloroform, Alcohol) of seeds of the plant malva parviflora evaluated against bacterial strains. The antibacterial activity was determined using paper discussion method and micro dilution method summarized in the table. The activity was quantitatively assessed on the basis of zone inhibition.

RESULT AND DISCUSSION

Perusal of the observation table concludes that chloroform extract in highly active against all the tested organisms where as solvent ether extract has been found to be

almost inactive against Bacillus pumilis and Bacillus subtilis, while solvent ether and alcohol extracts have almost very little activity.

The above result finally lead to conclusion that all the extracts except solvent ether and alcohol are associated with considerable antibacterial activity.

The petroleum ether benzene and acetone extracts have been found to possess moderate activity. Of course acetone extract has shown maximum antibacterial activity against Xanlhomonas compestris.

The observation of the MBC study has been tabulated in the table and it was found to be varying different extract. The extract which shows maximum value to MBC count has minimum antibacterial activities and the extract which shows minimum MBC value shows maximum antibacterial activity. The analysis suggest that the extract were bacteriostatic at low concentration but bactericidal at high concentration[6]

Table No.: 1
Antibacterial Activity of the Various Seed Extracts of Malva Parviflora (LINN)
Diameter (mm) of zone of Inhibition

S. No.	Culture	Petroleum ether	Benzene	Solvent Ether	Acetone	Chloroform	Alcohol	Control 500ppm
1.	staphylococcus albus	19	20.1	13.6	16	25.6	06	36.6
2.	bacillus anthraces	11	19	21	13.5	32	19	36.5
3.	Bacillus Cereus	16	11.2	17	25.15	35	02	37
4.	Bacillus pumilis	13	15	02	31.2	34	13	38.8
5.	Bacillus subtils	16	13.2	03	16	36	16.2	37
6.	Vibrio cholera	15.2	21	13	17	34.5	09	35
7.	xanthomnas compestris	18	23.5	13	31	32	05	34
8.	Xonthomonas malvacearum	19	15	17.1	24.8	31.8	07.6	36.5

Table No.: 2
MBC (Minimum Bactericidal Count) of various extract of Seeds Malva Parviflora (LINN)

S. No.	Culture	Petroleum ether	Benzene	Solvent Ether	Acetone	Chloroform	Alcohol	Standard
1.	staphylococcus albus	40.2	35.2	31.2	36.5	40.1	50.6	57.5
2.	bacillus anthraces	31.2	36.5	40.1	30.5	37.5	47.5	20.2
3.	Bacillus Cereus	37.5	50.5	54.5	30.3	40.1	50.6	57.5
4.	Bacillus pumilis	60.8	64.5	40.2	56.9	59.5	36.5	44.5
5.	Bacillus subtills	60.6	59.5	36.5	40.1	36.5	30.5	45.2
6.	Vibrio cholera	31.2	36.5	30.5	37.5	47.5	33.2	36.5
7.	xanthomnas compestris	37.5	50.5	37.5	47.5	50.3	58.5	45.2
8.	Xonthomonas malvacearum	43.5	50.6	30.2	40.8	60.5	64.6	54.6

CONCLUSION

The present study contained the potential antibacterial component that may be of great use for the therapy against various bacterial diseases. The study indicate that can be study further assay evaluate effectiveness of anti bacterial agent. The seeds extract of this plant may be explore more and more to develop a new and effective antibacterial agent.

As such these extracts may potentially be explored as powerful human antibacterial agents.

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