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Antifungal Activity of Various Extracts of Seeds of the Plant Malva Parviflora (Linn)

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Development of more effective and less toxic antifungal agents is required for the treatment of various fungal disease.Plants and their extraction preparation have beenused as medicine against infectious diseases.The present study was aimed to study, the antifungal activity of the seeds of various seed abstract of plant Malva Parviflora (Linn). The antifungal activity of seeds extract of plant was determine by using agar well diffusion method,MIC(minimum inhibitoryconcentration) and MFC (minimum fungicidal count)by using micro dilution method . The seeds extract of the plant were examined using Methanol, Ethyl acetate ,Petroleum ether and water as solvent and tested against different fungi pathogens. From the result it can be concluded that the all the seeds extract shows the significant activity against the micro organism, hence these extract may be used as a source of antifungal agent obtained from herbal medicine and may be explore as new and effective antifungal 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 antifungal agent.

Keyword: Malva parviflora (Linn), Natural order, Malvaceae, Seeds, Antifungal activity, MFC,MIC, zone of inhibition, Medicinal plant.

Plants are the source of largeamount of drug comprising to different group such as antibacterial , antifungal , antibiotics etc. 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 disease are widely distributed all over the world with various degree and common in the men and women. The plant derived compound have always been the important source of medicine for various disease and have received considerable attention in recent years due to their diverse pharmacological properties. 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

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increasing polarity in the soxhlet apparatus for about 70 hrs at (40-60c). After the extraction was concentrated to get a viscous mass. This was subjected for the analysis of antifungal activity in different solvent with fungal strains.

Afte the analysis of antifungal activity of the seeds extract of Malva parviflora (Linn) it is reported that, all the extract shows the different amount of antifungal activity. And can be used in future to produce the novel and highly potential antifungal drugs to cure infection diseases cause by fungi pathogens.

Experimental Method

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.

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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Culture Media preparation and its sterilization

In order to determine the antifungal activity, the Sabrouad dextrose agar medium"(52gms) was used to prepare to inoculums, which consist of peptone=5gm, Dextrose =20gm,Agar 10gm distilled water 500ml. The media was boiled to disssolution.then the medium was sterilized at 121◦C for 20min. The media was allowed to cool in 45◦C and 20 ml of solution sterilized was poured into the sterile petridish and allowed to solidify. The plates were labelled with the test microorganism and were spread over the surface of the medium . the plate was was dried at 30.C for 30mins and used for the disc diffusion method

Micro Organism use for test

The fungal strains used for antifungal activity are as follow. .

(a) Aspergillus Niger (b)Aspergillus Flavus (c) Rizopus Stolonifer(d) Candida Albican (e) Microsporum Gypesum.

Paper disc diffusion method

Zone of inhibition is measured by the filter disc diffusion[2,3] plate method[4] was employed for the determination of antifungal activity .The filter paper disc of 6mm diameter was cut and sterilized at 100◦c for 30 mins. The cut paper disc were impregnated with the solution of the disc at 40.c and slanted seeded with the microorganium. The plates were incubated at 30.c for 1-2 days and zone of inhibition growth(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. The growth was calculated using griesofulvin as standard 100% inhibition the plant extract ans standard antifungal agent dissolved in DMSO (100% biologically inert substance).

Minimum Inhibitory concentration(MIC)

The Minimum Inhibitory concentration was determined bythe broth method. The sabouraud dextrose liquid was prepared (a10ml of each broth was dispensed into separate test tube and was sterilized at 121.c for 15 mins.) and then allowed to cool. The two fold serial dilution of the extract was made in the decreasing concentr from the stock solution.the test tube of the broth was then incubated at 30.c for 1-5 days and observed the turbidity of growth. The lowest concentration whu\ ich showed no turbidity that test tube was recorder as the MIC. The MIC value was defind as the lowest concentration to inhibit visible growth.

Determination ofMinimum fungicidal count (MFC)

The MFC was determined by sub-culturing the test dilution on to afresh solid medium and incubated futher for 24 hrs. The concentration of plant extract that completely killed the fungi ws taken as MFC.Moreover, it was noted that most of the antifungal properties was shown by th plant extract. The result of Minimum Inhibitory concentration(MIC)and minimum fungicidal count (MFC) are recorded in the table .

Observation

In the present investigation, the inhibitory effect of different extracts (Petroleum ether, ethanol,methanol ,water) of seeds of the plant

Antifungal activity of the various seed extracts of malva parviflora (linn) diameter (mm) of zone of Inhibition

S. No.	Culture	Petroleum ether	Methanol	Ethanol	Water	Control 500ppm
1.	Aspergillus niger	22	27.1	33.6	16.2	37.6
2.	Asperigillus Flavus	15	29	24.6	15.5	38.4
3.	Rizopus Stolonifer	16.8	21.2	21.5	20.3	39
4.	Candida Albician	23.9	17.6	34.3	11.25	38.8
5.	MKicrosporum Gypesum	20	15.2	31.4	14.9	37.8

MIC (Minimum Inhibition Count) of various extract of Seeds Malva Parviflora (Linn)

S. No.	Culture	Petroleum ether	Methanol	Ethanol	Water	Standard griesofulvin
1.	Aspergillus niger	38..2	35.2	21.2	16.5	58.5
2.	Asperigillus Flavus	31.2	37.5	40.1	30.5	22.2
3.	Rizopus Stolonifer	27.5	30.5	45.5	23.3	47.5
4.	Candida Albician	50.6	54.4	38.2	36.9	44.5
5.	MKicrosporum Gypesum	40.6	57.7	32.5	20.1	55.2

MFC (Minimum Fungicidal Count) of various extract of Seeds Malva Parviflora (Linn)

S. No.	Culture	Petroleum ether	Methanol	Ethanol	Water	Standard
1.	Aspergillus niger	44.2	35.2	30.2	41.5	59.5
2.	Asperigillus Flavus	33.2	38.5	34.1	33.5	25.2
3.	Rizopus Stolonifer	38.5	40.5	38.5	32.3	47.5
4.	Candida Albician	22.8	34.5	25.2	32.9	44.5
5.	Microsporum Gypesum	49.6	38.5	48.5	52.1	47.2

malva parviflora evaluated against fungal strains. The antifungal activity was determined using paper disc diffusion method and micro dilution method summarized in the table. The activity was quantitatively assessed on the basis of zone of inhibition.

RESULT AND DISCUSSION

By the analysis of the observation table concludes that all the extract show the antifungal activity but the ethanol extract in highly active against all the tested organisms where as water extract has been found to show very less antifungal acitvity against all fungal strain, while other solvent shows the sufficent activity against the pathogen. The above result finally lead to conclusion that all the extracts except water solvent are associated with considerable antifungal activity.

The petroleum ether, methanol extracts have been found to possess moderate activity. Where as ethanol extract has shown maximum antfungal activity against candida albican.

The MIC value defined as the least concentration of the extract that inhibit growth of organisum. From the table it is analysed that the petroleum ether show least MIC value against cadida albicans and maximum against microsporum gypseum

The observation of the MFC study has been tabulated in the table and it was found to be varying different extract. The extract which shows maximum value to MFC count has minimum

antifungal activities and the extract which shows minimum MFC value shows maximum antifungal activity. The MFC analysis suggest that the fungal strain Candida albican show maximum antifungal activity Microsporum Gypesum show minimum antifungal activities.

CONCLUSION

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

As such these extracts may potentially be explored as powerful and novel human antifungal drugs agents.

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