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20. Preliminary Phytochemical Analysis and Antimicrobial Activity of Clerodendrum Multiflorum

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Abstract

The different solvent extracts of *Clerodendrum multiflorum* were tested for antimicrobial activity against the *Escherischia coli*, *Staphylococcus aureus*, *Pseudomonas aeruginosa* by agar diffusion method. The qualitative test for phytochemical analysis was performed of different solvent extracts of *Clerodendrum multiflorum*. The ethanolic extract of *Clerodendrum multiflorum* showed maximum antibacterial activity against all tested organisms and also gives positive test for preliminary phytochemicals analysis.

Introduction

Infectious diseases are remains major health issues throughout the world. The many pharmaceutical industries produced a variety of antibiotics but it showed the resistant to many microorganisms. There is an urgent need to search alternative phytomedicine for prevention of drug resistance. The medicinal plants contain several secondary metabolites which have potential to inhibit the growth and multiplications of pathogenic microorganisms. In the world, more than 80 percent of the medicine derived from plant and plant based medicine is more effective than the synthesized drugs (1). The phytochemicals containing medicine have very negligible side effects and showed significant inhibitory activity against pathogenic microorganisms.

Materials and Methods

Plant Material

The plant *Clerodendrum multiflorum* (Verbenaceae) was collected from Ratneshvari area, Dist. Nanded and plant identified and authenticated by Taxonomist, Department of Botany, Yeshwant Mahavidyalaya, Nanded-431602, Maharashtra.

Preparation of Plant Extracts

The stem of *Clerodendrum multiflorum* was collected and shade dried. Using mixture grinder the dried stem was made fine powder. The fine powder of plant was the extracted by

Soxhlet apparatus using different solvents water, ethanol and chloroform. The obtained extract finally concentrated and used for further activities.

Preliminary Phytochemical Analysis

Various solvent stem extracts of *Clerodendrum multiflorum* were screened for phytochemical analysis using standard protocol (2).

Test Microorganisms

In the present study, the test microorganisms (*Escherischia coli*, *Staphylococcus aureus*, *Pseudomonas aeruginosa*) used were obtained from culture collection Centre, School of Life Sciences, S. R. T. M. University, Nanded-431606, Maharashtra. The collected bacterial cultures were repeatedly subcultured using nutrient broth and incubated at 37°C for 24 hours.

Antibacterial Activity by Agar Diffusion Method

The antibacterial activity of different solvent extracts of *Clerodendrum multiflorum* was determined by using disc agar diffusion method. The subcultured bacterial suspension (100µl) prepared in nutrient broth is used for the spreading purpose on agar medium. 1mg, 2 mg and 5 mg of concentrated various extracts was used on sterile paper disc for the determination of antibacterial activity of the selected plant (3, 4). After sample adding, plates were kept for diffusion of extract for one hour. The plates were incubated for 24 hours at 37°C in incubator and finally observed the zone of inhibition in milimeter (mm). Gentamycin 5 mg/ml was used as standard for comparison.

Results and Discussions

The preliminary phytochemical analysis of different extract of *Clerodendrum multiflorum* showed the presence of saponin, phenols, tannins, glycosides, terpenoids, flavonoids, alkaloids and coumarins in water, ethanol and chloroform extract except absence of saponins in water extract. The results of phytochemical analysis are shown in Table1. The large content of phytochemicals constitutes in the plant which shows higher the biological activity.

Antibacterial activity of various extracts of *Clerodendrum multiflorum* showed in the Table 2.

The ethanolic extract of *Clerodendrum multiflorum* showed maximum antibacterial activity while water extract and chloroform extract showed considerable activity as compared to Gentamycin. The largest zone of inhibition may be due to the presence of variety of phytochemicals. The presence of flavonoids, alkaloids, terpenoids, phenols, saponins, coumarins

which responsible for the antibacterial activity (5). The many scientific reports (6) suggest that high content of phytochemicals and bioactive compounds which showed higher potential drug for inhibition of various pathogenic microorganisms.

Conclusion

From the results, it indicates that the ethanolic extract have maximum activity, this may be due to the presence of chemical constitutes responsible for the antibacterial activity and the most of the compounds are soluble in ethanol. Further work is necessary to isolate and purification of compounds from *Clerodendrum multiflorum* stem extract, which will be useful as an alternative to the synthetic commercial antibiotics.

Table 1. Preliminary phytochemical analysis of stem extract of *Clerodendrum multiflorum*

Sr. No.	Phytochemical Test	Stem extract of *Clerodendrum multiflorum*		
		Water Extract	Ethanol extract	Chloroform extract
1	Saponins	-	++	+
2	Phenols	+	++	+
3	Tannins	+	++	+
4	Glycosides	+	++	+
5	Terpenoids	+	++	+
6	Flavonoids	+	++	+
7	Alkaloids	+	++	+
8	Coumarins	+	++	+

Table 2. Antibacterial activity of stem extract of *Clerodendrum multiflorum*

Sr. No.	Microorganisms	Zone of Inhibition (mm)			
		Stem extract of *Clerodendrum multiflorum*			
		Water extract	Ethanol extract	Chloroform extract	Gentamycin (5 mg/ml)
1	*Escherischia coli*	5	11	4	13
2	*Staphylococcus aureus*	7	10	6	15
3	*Pseudomonas aeruginosa*	5	13	4	15

References

1. Mahesh B, Satish S. (2008). Antimicrobial Activity of Some Important Medicinal Plant Against Plant and Human Pathogens .World Journal of Agricultural Sciences 4(S), 839-843.

2. Yadav RNS, Agarwala M. (2011) Phytochemical analysis of some medicinal plants. Journal of Phytology 3(12), 10-14.
3. Barbour EK, Mohammed AS, Sagherian VK, Habre AN, Talhouk SN. (2004) Screening of selected indigenous plants of Lebanon for antimicrobial activity. Journal of Ethnopharmacology 1-7.
4. Palombo EA, Semple, SJ. (2001).Antibaterial activity of traditional Australian medicinal plants. J. Ethnopharmacology, 77, 151=-157.
5. Srinivasan D, Sangeetha N, Suresh T and Lakshmana P. (2001) Antimicrobial activity of certain Indian Medicinal plants usedin folkloric medicine, J. Ethnopharmacology, 74, 217-220.
6. Balandrin MF, Klocke J.A., Wurtele ES and Bollinger WH. (1985). Natural plant chemicals: Sources of Industrial and Medicinal materials, Science, 228, 1154-1160.