



# ANTIMICROBIAL ACTIVITY AND PHYTOCHEMICAL STUDY OF LEAF OF CLERODENDRUM INFORTUNATUM MEDICINAL PLANT

**Mahesh A. Pawar<sup>1</sup>**

Assistant professor

Department of Chemistry

Shri Shivaji College of Arts Commerce and Science, Akola,(M.S)India

## Abstract

The present work deals with the study of antimicrobial activity and phytochemical analysis of leaf extract of *Clerodendrum Infortunatum* a medicinal plant. *Clerodendrum Infortunatum* great source of bioactive compounds which is used across the country. *Clerodendrum Infortunatum* is a well popular medicinal plant widely used in the treatment of many clinical reason in India. The plant having many useful medicinal properties like antimicrobial activity, antifungal activity, anti-inflammatory activity, antidiabetic activity, anxiolytic activity, antineoplastic, analgesic, antimalarial, diuretic, wound healing activity, skincare, respiratory disorders, because of the to the presence of different important constituents such as flavonoids, glycosides, phenols, tannins, and steroids, in present study which have been identified through different solvent extraction. Different part of this plant has medicinal uses. So presence of different important phytochemicals, this plant can be used for medicines without any hazardous effects as its extracts have proven to have good anti-microbial efficiency.

## Key words

*Clerodendrum infortunatum*,, medicinal property, phytochemical analysis, anti- microbial activity.

## Introduction

The medicinal herbs have significant role in the area of medicine and the herbal products are widely used across the world as alternative medicine. The medicinal plants are the large source of herbal products and these products have large contribution in human health and their betterment. Several studies reveals that extract obtained from medicinal plants contains different phytochemicals which are helpful in for prevention from many type diseases. Large number of medicinal plants species are being used by many tribal communities for treatment of many diseases. The bioactive phytochemical constituents are responsible for physiological effect on the human body. So it becomes necessary to study the phytochemical constituents of medicinal plants. [1].

*Clerodendrum infortunatum* L is an medicinal plant belongs to the family Verbenaceae. In Malayalam it is commonly known as Peruvellam and in Hindi it is known as Bhant. *Clerodendrum infortunatum* is largely found in India, especially in the sub-Himalayan region of West Bengal, Pakistan, Burma, Malaysia and Ceylon. Root, Leaves bark, stem shows the medicinal properties. The various parts such as leaves root barks stem of *Clerodendrum infortunatum* have been used for treatment of diseases like malaria, tumors , snake bites. The extract of leave of this plant is found to be very useful in fever, cough, and Scorpion sting.[2]. Various species of *Clerodendrum* genus have been used from couple of years and their antioxidant potential have been already proved. In Indian folk medicine various parts of the plant have been used for treatment of diseases like asthma,

inflammation, epilepsy. The *Clerodendrum infortunatum* Linn. Shrub is of 2-4 feet in height [3]. The leaves are slightly bitter, and widely used for treatment of, skin diseases and significant in small pox [4]. Plants contain many active compounds such as alkaloids, steroids, tannins, glycosides, volatile oils, fixed oils, resins, phenols flavonoids etc. which are deposited in their specific parts such as leaves, flowers, bark, seeds, fruits, root[5]. The bioactive compounds like alkaloids, steroids, tannins, glycosides, phenols flavonoids are found in various parts of the plant such as seeds, fruits, root, leaves, and flowers.

## Material and Methods

### Collection of Plant material and Extraction

The Plant Material were collected from the area of Mahan dam district Akola as per standard method [6]. Where the *Clerodendrum infortunatum* Shrub found in abundant. First the fresh leaves of the collected plant were separated, wash cleanly several time using tap water, thereafter the leaves were rinsed by using distilled water, and then shade dried at 28 0C.for 72 hour. The shade dried leaves were grind into a powder from this material kept in air tight bottle for other extraction.

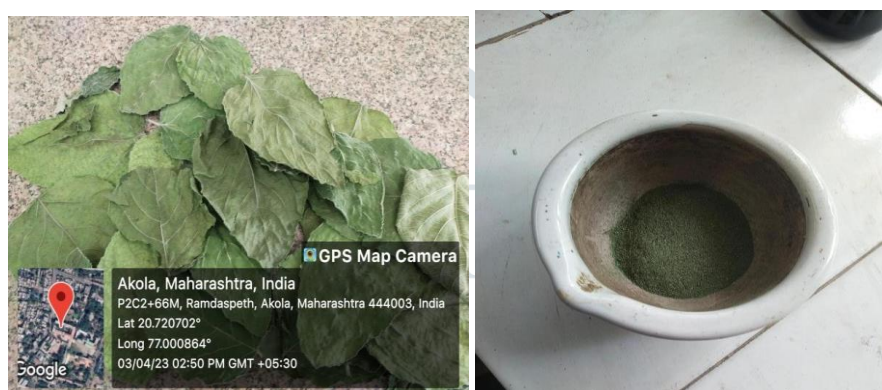


fig 1: Dried leaves and powder of *clerodendrum infortunatum*

### Preparation of the Extract

The powder of plant material was subjected to hot continuous extraction in soxhlet apparatus. The extraction were done using 15 gram of powder in different solvent methanol, Acetone, Chloroform ,petroleum ether, water, 50% Water + Ethanol. The extract collected in tarred conical flask. The Solvent later on removed by distillation. Before the phytochemicals screening, we stir the extract on magnetic stirrer for 1 hr. for the more solubility in solvent to get good results. This extract then utilised for to study different qualitative chemical test and determined different phytochemicals.

### Preliminary Phytochemical Screening

Phytochemical analysis of *Clerodendrum infortunatum* were performed by standard procedure prescribed by Kokate and Harborne [7,8]

### Result and Discussion

Phytochemical analysis were carried out using water, ethanol, acetone, chloroform, pet-ether, sand 50%ethanol + Water as extracting solvent of leaves of *Clerodendrum infortunatum*. In water extract except flavonoid, other phytochemicals like,alkaloid,terpenoid,Phenol,Tannin, saponin, ,quinnines, steroid were found to be present. In Ethanol alkaloid terpenoid, Phenol, Saponin , quinine, steroid and Glycoside were found to be present. In 50% mixture of Water and Ethanol only alkaloid, terpenoid and quinnene were found to be present. Acetone extract shows the presence of Flavonoids, Saponins and Quinnines. In Chloroform extract only two phytochemicals found present namely alkaloid and Flavonoid.Petroleum Ether showed the presence of alkaloid and terpenoid and flavonoid and Quinnines.This analysis may be helpful for analysing quality and purity of crude drugs. Showed in table no.1

Table 1: Phytochemical analysis leaves of *Clerodendrum infortunatum* Where, (+) present and (-) absent

Sr. No.	Test	Water	Ethanol	50% Water+ Ethanol	Acetone	Chloroform	Pet-ether
1.	Alkaloid	+	+	+	-	+	+
2	Terpenoids	+	+	+	-	-	+
3	Phenol and Tenin	+	+	-	-	-	-
5	Saponis	+	-	-	+	-	-
6	Flavonoids	-	-	-	+	+	+
7	Quinnines	+	+	-	+	-	+
8	Steroids	+	+	+	-	-	-
9	Glycosides	+	+	-	-	-	-

### Anti-Microbial Activity Study

The Ethanolic extract was prepared by using the Soxhlet apparatus of *Clerodendrum infortunatum* to study its antimicrobial potential. Antimicrobial analysis of extract was carried out against two different organisms *S.aureus* and *E.coli*. The zone of inhibition in mm for the tested organism with the ethanolic extract of *Clerodendrum infortunatum* and by agar well diffusion method is shown below. In the present study, Ethanolic leaf extract *Clerodendrum infortunatum* obtained by Soxhlet extraction was screened to detect the presence or absence of several bioactive compounds which are reported to cure different diseases. Anti-microbial analysis of Leaf extract was carried out against two different organisms *S. aureus* and *E. coli* by agar well diffusion method. It was observed that the zone of **18.5 mm** was recorded against *S. aureus* organism whereas **16 mm** zone was recorded against *E. coli* organism. The results indicates that the ethanolic extract of *C. amboinicus* is having anti- microbial efficiency in controlling the microorganisms



Fig: 3 Anti-Microbial Activity

## Conclusion

In this work phytochemical analysis have been done and the result revealed that various phytochemicals like alkaloids, flavonoids, amino acids, steroid, saponin and tannins. The phytochemical constituent confirmed utilization of leaves for medical treatment. Now a days Indian peoples are widely using medicinal plants and phyto-chemicals regarding health care. The study can be useful for identification and authentication of *Clerodendrum infortunatum*. Analysis have been carried out to investigate the antimicrobial activity of aqueous ethanolic extract of *Clerodendrum infortunatum* against multidrug resistant organism. The investigated result shows that the extract of dried leaf powder of *Clerodendrum infortunatum* in different solvent reveals significant antibacterial effect against drug resistant bacteria such as *S. aureus*, *E. coli*.

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