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PRELIMINARY PHYTOCHEMICAL SCREENING OF CRUDE LEAF EXTRACT OF *CLERODENDRUM PHILIPPINUM SCHAUER*

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ABSTRACT

Keywords:

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The genus *Clerodendrum* is very widely distributed throughout the world and has more than five hundred species. Many species of this genus have been described in various indigenous systems of medicines for the treatment of various life-threatening diseases. In the present study the active phytocomponents of *Clerodendrum philippinum Schauer* were screened for the presence of phytochemicals viz., alkaloids, cardio glycosides, flavanoids, steroids, saponins, terpenoids, proteins, phenols and tannins. They were determined qualitatively using standard literature methods. The present study is intended to show the Phytoconstituents of the medicinal herbs and also provide a scientific data base line which is of particular importance for the local practioners as well as for the local people using these herbs for a variety of disorders.

INTRODUCTION

The WHO estimated that about 80% of populations in developing countries rely on traditional medicine for their primary health care needs¹. The use of plants for prevention and treatment of various health ailments has been in practice from time immemorial and it is estimated that about 25% of drugs prescribed are derived from plants, moreover, WHO's essential medicine list contains 252 drugs out of which 11% is exclusively of plant origin. Medicinal plants played a key role in health promotion of world. It is estimated that about 25% of all modern medicine are directly or indirectly derived from higher plants. A certain interest in medicinal plants has been reborn, even though the emphasis persists in research of synthetic compounds². These substances are potentially toxic and are not free of side effects on the host. This has urged microbiologist all over the world formation of new antimicrobial agents and evaluation of the efficacy of natural plant product as the substitute for chemical antimicrobial agents. Also pharmacopoeia still contains at least 25% drugs derived from plants and many other which are synthetic analogues built on prototype compounds isolated from plants. These are estimated to be around 25,000 effective plant based formulation are available in the indigenous medical texts formulation used in folk medicine and known to rural communities all over India and around 10,000 designed³. In the present scenario, pharmaceutical companies are involved in research on plant materials for their potential medicinal value as the demand for herbal products is growing exponentially due to its fewer side effects as compare to other system of medicines^{4, 5}.

Studies on the extracts of different species of the genus *Clerodendron* have been carried out by a number of researchers round the globe⁶. Roots and leaf extracts of *C. indicum*, *C. phlomidis*, *C. serratum*, *C. trichotomum*, *C. chinense* and *C. petasites* have been used for the treatment of rheumatism, asthma and other inflammatory diseases^{7, 8}. The common name of *Clerodendrum philippinum* Schauer (= *clerodendrum fragrans* co.T.Aiton) is Chinese Glory Bower, it is a member of Verbenaceae family, known as scent malli in India; it was distributed in southern Asia. It is Semi-woody shrub to 10 ft tall. Leaves broad, up to 1 ft long and nearly as wide, margins toothed, somewhat lobed. Flowers in tight clusters, white with pink or red tinge, fragrant. No fruits. Grown as ornamental. Spreads vegetatively. Roots and leaf extracts of *C.philippinum* have been used for the treatment of rheumatism, asthma and other inflammatory diseases^{9, 10}. From the existing information it is evident that the plant may possess important biological activities. The main objective of this study was to evaluate the photochemical analysis in dried leaves of *Clerodendrum philippinum* Schauer.

MATERIALS AND METHOD

COLLECTION OF PLANT LEAVES

The leaves were collected from Udumalapet, Tirupur District.



Fig: *Clerodendrum philippinum* Schauer

The leaves were identified by Dr.Gopalan, Department of Botany, Karpagam University, Coimbatore. The plant leaves were thoroughly washed with tap water, shade dried, crushed in a homogenizer to fine powder and stored for further studies.

EXTRACT PREPARATION

The plant leaves were shade dried and powdered. The extraction was done with petroleum ether, ethyl acetate, chloroform, ethanol and water by cold percolation method¹¹. 10g of dried powder was taken and 100mL of solvents (Petroleum ether, Ethyl acetate, Chloroform, Ethanol and Water) were added in a tight closed container and kept for 72 hours incubation. After the 72 hours incubation, the extracts were filtered by using Whatmann's filter paper.

PHYTOCHEMICAL ANALYSIS

Phytochemical screening of the extracts of *C.philippinum* Schauer was estimated according to the method^{12, 13}.

Tests for Alkaloids

Dragendroff's test: 2 ml of the extract and 0.2 ml of dilute hydrochloric acid were placed in a test tube and then 1 ml Dragendroff's reagent was added.

Test for Flavanoids

One ml of the extract was treated with magnesium turnings and 1-2 drops of concentrated hydrochloric acid added to it.

Tests for Tannins

Ferric Chloride Test: 5 ml of the extract was placed in a test tube and then 1 ml of 5% Ferric Chloride solution was added to it.

Test for Saponins

To 1 ml of the extract, 1 ml of alcoholic vanillin solution was added which was followed by the addition of few drops of concentrated sulphuric acid.

Tests for Steroids

Sulphuric acid test: 1 ml of the extract was placed in a test tube and 1 ml sulphuric acid was added to it.

Tests for Glycosides

Sulphuric acid test: 1 ml of the extract was placed in a test tube and 1 ml sulphuric acid was added to it.

Test for Amino acids and proteins

Amino acids: To one ml extract, 2 drops of freshly prepared 0.2% Ninhydrin reagent was added and heated.

Proteins: The extracts were treated with 1.0 ml of 40% sodium hydroxide solution and 2 drops of 1% copper sulphate reagent.

Test for phenols

One ml of the extract was treated with few ml of gelatin solution was added to it.

Test for Terpenoids

Liebermann test: To 1 ml of extract 3 ml of acetic acid and few drops of concentrated sulphuric acid were added to it.

RESULTS

PHYTOCHEMICAL ANALYSIS

In qualitative analysis of *Clerodendrum philippinum Schauer* leaves showed the presence of secondary metabolites such as alkaloids, flavanoids, terpenoids, phenols, Tannins, saponins, Amino acids and proteins, Glycosides and steroids which are depicted in table 1. Among the various extractions studied, ethanolic extraction showed the presence of several Phytoconstituents.

Table 1: Phytochemical analysis of *Clerodendrum philippinum Schauer* leaves

Phytoconstituents	Petroleum ether	Chloroform	Ethyl acetate	Ethanol	water
Alkaloids	-	+	+	+	+
Flavanoids	-	+	-	+	+
Terpenoids	+	+	+	+	+
Phenols	+	+	+	+	+
Tannins	+	-	+	+	+
Saponins	+	-	-	+	-
Amino acids and proteins	-	+	+	+	+
Glycosides	+	-	-	-	-
Steroids	+	-	-	-	-

+ = Presence, - = absence

DISCUSSION

Phytochemical screening was carried out to identify major biologically active phytoconstituents¹⁴. Plants are potent biochemical factories and have been components of phytomedicine since times immemorial. Plant based natural constituents can be derived from any part of plant like bark, leaves, flowers, roots, fruits, seeds, etc i.e. any part of the plant may contain active components. The beneficial medicinal effects of plant materials typically result from the combinations of secondary products present in the plant. The medicinal actions of plants are unique to particular plant species or groups are consistent with this concept as the combination of secondary products in a particular plant is taxonomically distinct¹⁵.

The phytochemicals present in *Clerodendrum philippinum Schauer* are essential in many medicinal plants responsible for the antioxidant property either by scavenging free radicals or by preventing their formation¹⁶. The above results suggest, the medicinal property of the leaves might be due to the presence of these bioactive components present in *Clerodendrum philippinum Schauer*. Since, the leaves possess potent Phytochemical Constituents it can be used to cure various diseases. So the various active compounds should be identified from this leaves, which might be used as therapeutic agents.

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