A preliminary Phytochemical Studies on the seeds of Celastrus paniculata, Willd.
H Gurumurthy, V Krishna, H Ravikumar Patil, S Babu

Citation

Abstract
Celastrus paniculata, Willd, is a woody liane belongs to the family Celastraceae The plant is popularly known as “Jyothismathi” in Ayurvedic system of medicine. The bark of this plant is useful as an abortifcient. The leaves and leaf sap is a good antidote to opium poisoning. In the present study, the compound was separated by using coloum chromatography method and purity of the compound was checked by TLC method. The qualitative tests conducted to know the presence of Carbohydrates, Terpenes, Saponins,Glycosides,Alkaloids. The different solvent extract of the plant showed the positive result for different compounds.

INTRODUCTION
The green plants are the storehouses of many chemical components. They have a special capability of converting simpler inorganic compounds into complex organic compounds, which are used for several metabolic activities called metabolites (Horton and Moran, 1996). Metabolites of plants, are grouped into two categories namely primary metabolites and secondary metabolites. The primary metabolites are used for the growth of plants and also for their survival. But secondary metabolites don't play a considerable role in the growth of the plant. As these compounds receive secondary importance in plant growth they are named as secondary metabolites. On the contrary they are the principle components play an important role against diseases and disorders in both plants and human beings. The primary metabolites included carbohydrate, proteins, enzymes, Lipids, Vitamins and growth hormones of plant. Secondary metabolites are the substances, which are produced by plants as defense chemicals. It includes Alkaloids, Flavonoids, Essential oils, Phenols Terpenes etc.

The use of plants for medicinal purposes starts from prehistoric times. The cumulative knowledge of tribal and herbal practitioners and millions of housewives flow into a main stream, which emerged as Indian system of medicine, called Ayurveda. The modern medicine is analogous to the fire fighting system.

Even after attaining independence in India, it is not possible to give relief to more than 40% of the populations residing in the urban area (Keshavamurty, 1988). The main aim of Ayurveda is relieve the diseases either by giving whole plant or crude extracts, rather than to analyse the active principles present in that plants. But the scientific mind does not came to a conclusion unless it is experimentally proved, which part is affected, which part of plant is used for medicine, what are the chemical components present in the plant? And how the active principles works against the diseases? The present investigation is aim to focus the light on the chemical constituents of seeds of a valuable medicinal plant Celastrus paniculala Willd.

BOTANICAL DESCRIPTION
C.paniculata willd., is a woody liane belongs to the family Celastraceae The plant is popularly known as “Jyothismathi” in Ayurvedic system of medicine (Chopra, 1956). That means to enlighten mental power. The vernacular name is Kariganne in Kannada. It is found distributed in China, India, Malaysia, Philippines and Thailand.

Because of its high medicinal value and destruction of habitat, this species is faced the stage threat and its abundance is very less in tropical moist deciduous forest of India and it is reached the stage of vulnerable (Koopowitz, 1990).

MEDICINAL USES
The classical Ayurvedic text of Surshrutha Sambitha refers to Jyothismathi as a constituent of wound cleaning group. The bark is useful as an abortifcient. The leaves and leaf sap
is a good antidote to opium poisoning. The seed oil is intellect promoting and used for curing Epilepsy. It is also useful in abdominal disorders, ben-ben and sorus, head ache, joint pains, leucoderma, liver disorders, paralysis, ulcers etc.

**MATERIALS AND METHODS**

**MATERIAL SOURCE**
The plant specimens and seeds were collected from the Jogimatti hill ranges of Chitradurga, Karnataka, India. The specimens were authenticated by perusing through the floristic literatures (Gamble, 1915; Saldanha, 1976, 1984).

**PREPARATION OF MATERIAL FOR ANALYSIS WORK**
The seeds were dried in shade and used for analysis purposes. About 100gms of shade dried seeds were made into powder by using electrical grinder. The powdered materials were filled in the thimble of soxhlet apparatus. The material was exhaustively extracted with Petroleum ether (40°C) for about 48 cycles. The solvent was distilled off at low temperature and under vacuum and concentrated on water bath to get thick syrup. After extracting with Petroleum ether the material was refluxed with other solvents like Benzene, Chloroform, Alcohol and finally with Water.

**SEPARATION OF CHEMICAL CONSTITUENTS**

**THIN LAYER CHROMATOGRAPHY METHOD:**
The petroleum ether extract was subjected to thin layer chromatography. The techniques formulated by Stahl (1965) were used in TLC method. About 0.1 to 0.2 ml of concentrated Petroleum ether extract was loaded on the plate by using capillary tube. The spotting was done at the centre of plate and 2Cms above from the base. During spotting other parts of the adsorbent is not disturbed. The spotted plates were carefully dried and used for elution purpose. Initially various solvents such as Benzene, Petroleum ether, Chloroform, Methanol were tested alone. Later different combinations of solvents were tested depending on polarity basis.

**DEVELOPMENT OF CHROMATOGRAM**
The eluted spotted plates were dried at room temperature and they were placed in iodine chamber for the development of chromatogram. The Rf value of cleared spots were calculated and proper solvent system was identified.

**THE COLUMN CHROMATOGRAPHY OF PET-**

**ETHER EXTRACT:**
50 ml of concentrated Pet-ether extract were dissolved in 10 ml of Benzene. The activated Silica gel-H is added slowly to benzene solution to adsorb pet ether extract. The chromatograms are allowed to develop. Elution was started after the formation of complete bands and it was adjusted to 12-15 drops per mm. Nearly 10 ml of eluted solvent was collected in a clean bottle of 50 ml capacity and were labeled by giving number such as 1, 2, 3, 40. The bottles containing solvent are closed by using separate stopper and were stored in refrigerator for further use. The purity each eluted sample was tested by using TLC method, Thin Layer Chromatography is a technique that is used to separate wide range of compounds of biochemical interest. It can be utilized for quantitative assays as well for qualitative and preparative work (Stahl, 1965). The chromatographic separation of compounds occurs because of solvents of different composition varies in between in the migratory and mobile phase and stationary.

**RESULTS AND OBSERVATIONS**
Medicinal plants contain a variety of chemical components such as Alkaloids, Terpenes, Carbohydrates, Glycosides, Saponins etc. Phytochemical screening of the plant is preliminary and important aspect. From very early times chemical plant product had received adequate attention on account of the economic importance of medicinally important active constituents. Preliminary phytochemical analysis are helpful in finding the chemical constituents in plant materials. They are also useful for the development of small-scale industry engaged in extraction of crude herbal drugs.

In the present investigation phytochemical screening of seeds of C. paniculata was carried out. The solvent systems such as Pet-ether, Benzene, Chloroform, Alcohol and Water were used for extraction, extraction was placed in Coolum chromatography to separate compounds and separated compounds were confirmed by using TLC method. In TLC plate specific solvent system was analyzed by trial and error method. Initially different solvents like Pet-ether, Benzene, Chloroform, Ethyl acetate, Methanol were tested alone. Later different combinations of solvents were also tested in 1:100% ratio. Among different solvent system tested, Benzene was proved to be the mobile phase for the separation of constituents of C. paniculata. The TLC of Pet-ether extracts was eluted in Benzene mobile phase. In this phase the four major spots were clearly separated and diagram (1) represents the Rf value of the compounds. The
compounds having similar RF values were pooled and concentrated.

Each solvent extracts were collected separately, concentrated on the water bath and used for qualitative testing of chemical constituents. The qualitative tests conducted to know the presence of Carbohydrates, Terpenes, Saponins, Glycosides, Alkaloids are depicted in the Table-1

**Table 1**

<table>
<thead>
<tr>
<th>No</th>
<th>TEST</th>
<th>Pet Ether fraction</th>
<th>Benzene fraction</th>
<th>Chloroform fraction</th>
<th>Alcohol fraction</th>
<th>Water fraction</th>
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**Figure 1**

Table 1

**Figure 2**

Diagram 1

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