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Preliminary phytochemical and biochemical studies on *Vitex negundo*, Linn.

***Rampriya S, Arul Sheeba Rani M**

M.Sc, Botany Nirmala collage for Women, Coimbatore, Tamil Nadu, India

Abstract
Plants have a great potential for producing new drugs for human benefits. Plants are used in traditional medicine contain a vast array of substances that can be used to treat chronic and even infectious diseases. According to a report of World Health Organization, more than 80% of world's populations depend on traditional medicine for their primary health care needs. The demand of drugs from plant sources is continuously increasing. Therefore it is essential for systematic evaluation of plants used in traditional medicine for various ailments. The present study of phytochemical and biochemical analysis of acetone leaf extract of *Vitex negundo* aim is to reveal the presence of Carbohydrates, Phenols, Proteins, Tannins, Flavonoids, Quinines and Starch.

Keywords: phytochemical, biochemical, *Vitex negundo*

Introduction
Herbs are nature's gift to mankind. Herbal medicines have been a part of human life through the past centuries. It is high time to make concrete efforts to promoted and propagate their great heritage. It has curative properties due to presence of various complex chemical substances of different composition, which are found as secondary plant metabolites in one or more parts of these plants. These plant metabolites according to their composition are grouped as alkaloids, glycosides, corticosteroids, essential oils etc. Medicinal plants have been a major source of therapeutic agents since ancient times to cure human disease. The revival of interest in natural drugs started in last decade mainly because of the wide spread belief that green medicine is healthier than synthetic products. Medicinal plants form a large group of economically important plants that provide the basic raw materials for indigenous pharmaceuticals. The medicinal value of plants lies in some chemical substances that produce a definite physiologic action on the human body. The phytochemical research based on ethno pharmacological information is generally considered effective approaches in the discovery of new anti-infective agents from higher plants.

Materials and Methods
Study Area- (Fig -1&2)
Tamil Nadu is one of the 28 States of India. Its capital is Chennai (formerly known to as Madras) the largest city. Tamil Nadu lies in the southern most part of the Indian Peninsula and is bordered by the union territory of Puducherry and the states of Kerala, Karnataka and Andhra Pradesh. Coimbatore is the city in Tamil Nadu, South India. It is the second largest city and urban agglomeration in the Indian State of Tamil Nadu after Chennai. It is the capital city in Kongu Nadu region and is often been refered to as Manchester of South India.

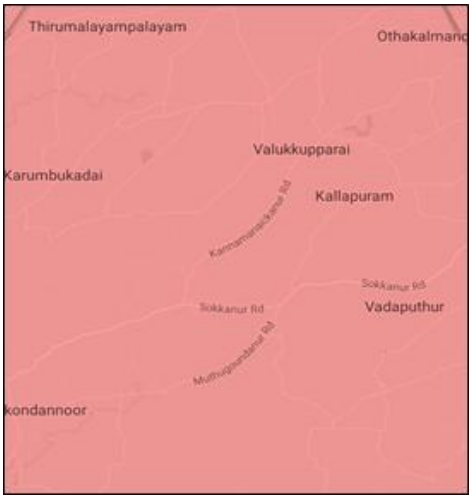

Fig 1: Location map

Fig 2: Study area

Systematic position

Division	-	Spermatophyta
Class	-	Magnoliopsida
Sub class	-	Asteridae
Order	-	Lamiales
Family	-	Verbenaceae
Genus	-	*Vitex*
Species	-	*V. negundo*, Linn.

Fig 3: Habit of *Vitex negundo*

Vitex negundo is a woody, aromatic deciduous shrub growing to a small tree. It is also known as the five-leafed chaste tree or monk's pepper. Its most striking feature centers on a cluster of five pointed leaves resembling a palm. It is an erect, 2-5 m in height, slender tree with quadrangular branchlets. The leaves have five leaflets palmately arranged, which are lanceolate, acute, glabarous, 4-10 cm long, hairy beneath and pointed at both ends**.** The terminal leaflet as a long petiole whereas, the lateral ones have short petiole. Flowers are bluish purple in colour borne on axillary or terminal panicle upto 30 cm long. The leaves are used as antibacterial, antiparasitical, alternative, astringent, febrifuge, sedative, tonic, insect repellents and vermifuge. They are useful in dispersing swellings of the joints from acute rheumatism and of the testes from suppressed gonorrhea.

Collection of the sample

For the present study about *Vitex negundo* selected in Valukkupparai to find out Phytochemical and biochemical analysis. Fresh leaves were collected during the month of November. The diseased free leaves are collected for this investigation. Then, the leaves are surface sterilized with 0.1% mercuric chloride and alcohol from few seconds. The plant sample was thoroughly washed with distilled water. The collected leaves were dried under shade and powdered using a mechanical grinder and made fine powder and transferred into airtight containers with proper labelling for further use.

Fig 4: Powdered sample of *Vitex negundo* leaves

Preparation of the extract

The extract of the powdered leaf material was prepared by soxhlet extraction method. About 30 gm of powdered plant material was uniformly packed into a thimble and extracted with 375 ml of solvents separately. The acetone is used as solvents. The process of extraction continued for 24 hours or till the solvent in siphon tube of an extractor become colourless.

Preliminary phytochemical analysis

The phytochemical screening of ethanol extract of *Euphorbia hirta*were analysed by standard methods and shown various phytochemical constituents such as saponins, phenols, alkaloids, protein, tannins, flavonoids, carbohydrates and terpenoids.

Biochemical analysis

The biochemical analysis of Carbohydrate and Starch were analysed by Anthrone method (Hedge, J.E. and Hofreiter, B.T 1962) [8].

Protein estimation were analyzed by Lowry's method (Lowry, *et al*., 1951) [9].

Results and Discussion

The Phytochemicals are responsible for medicinal activity of plants, these are non- nutritive chemicals that have protected human from diseases. Phytochemicals are basically divided into two groups, that is primary and secondary metabolites based on the function in plant metabolism. Primary metabolites are comprise common carbohydrates, amino acids, proteins and chlorophylls while secondary metabolites consist of alkaloids, saponins, steroids, flavonoids, tannins and so on. Phytochemical constituents are the basic source for the establishment of several pharmaceutical industries. The constituents are playing a significant role in the identification of crude drugs. Phytochemical screening helps to reveal the chemical constituents of the plant extract and also used to search bioactive agents for starting products used in the synthesis of some useful drugs. Preliminary phytochemical screening of *Vitex negundo* revealed that the highly present of flavonoid and carbohydrates. phenols, proteins, tannins and quinines are slightly present in acetone leaf extract. saponins, alkaloids, terpenoids and glycosides absent in acetone leaf extract (Table 1)

Table 1: Qualitative analysis of Phytochemicals present in the acetone leaf extract

S. No	Phytochemicals	Acetone extract
1	Saponins	-
2	Phenols	+
3	Alkaloid	-
4	Proteins	+
5	Tannins	+
6	Flavonoides	++
7	Carbohydrate	++
8	Quinones	+
9	Terpenoides	-
10	Glycosides	-

(++ indicates strongly present, + indicates moderately present, and – indicates absent)

Table 2: Carbohydrate, Protein and Starch contents present in the acetone leaf extract

Sample	Carbohydrate content in mg/gm	Protein content in mg/gm	Starch content in mg/gm
Powdered leaf	22 mg	17 mg	1.53 mg

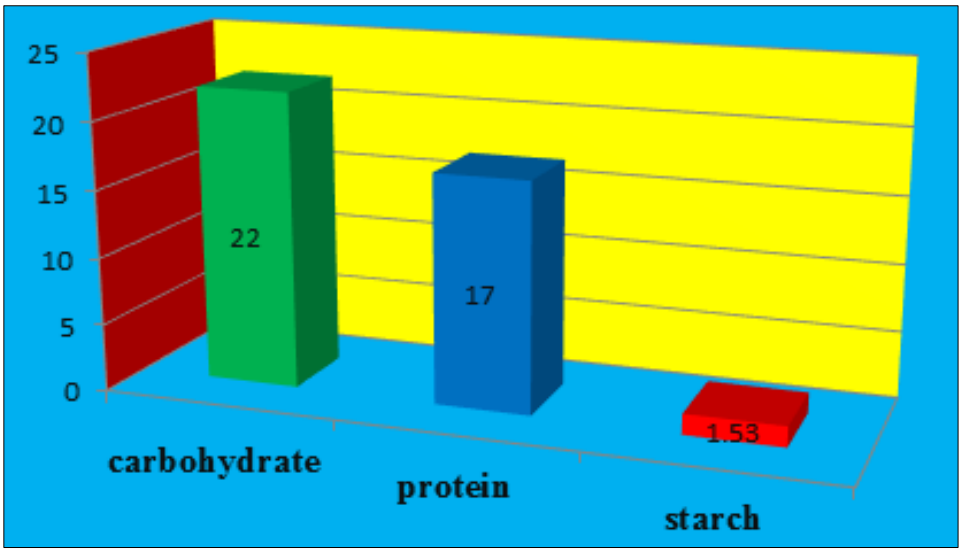

Fig 5: Carbohydrate, Protein and Starch contents present in the acetone leaf extract

Biochemical analysis of extract of *Vitex negundo* is presented in (Table 2). The leaves contain more amount of carbohydrate (17mg) protein (22mg) and less amount of starch (1.53 mg).

In phytochemical analysis the present study indicates the highly present of flavonoids and carbohydrates. Phenols, proteins, tannins and quinines are slightly present in acetone leaf extract. Saponins, alkaloids, terpenoids and glycoside absent in acetone leaf extract. Anthrone Method and Lowry's method were used to determine the content carbohydrate, protein and starch. The leaves contain more amount of carbohydrate, protein and less amount of starch. Hence, there is a need for scientifically screening of the plants, which may help the pharmacologists and phytochemists in discovering innumerable therapeutic agents because the presence of rich medicinal properties like all the secondary metabolites. The plant can be used as traditional medicine in alternative form for human health and development. The plant also used as insects such as mosquito repellents and it is to improve our quality of life and diseased free life by using medicinal plant for various illnesses.

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