A Review on Low Cost Herbal Mosquito Repellent From Begunia Leaf
Surbhi Sharma. Gunjan jadon
M Pharm (Pharmacy)
M Pharm (Pharmaceutical Chemistry)

ABSTRACT
Vitex negundo (Verbenaceae) is a hardy plant, flourishing mainly in the Indian subcontinent. All parts of the plant, from root to fruit, possess a multitude of phytochemical secondary metabolites which impart an unprecedented variety of medicinal uses to the plant. Larger trials are required to prove its all activities before it is recommended in future for clinical industry. It is interesting to note that a single plant species finds use for treatment of a wide spectrum of health disorders in traditional and folk medicine; some of which have been experimentally validated. The plant is a component of a number of commercially available herbal formulations and has also shown potential as an effective bio-control agent. Employment of techniques such as cell and tissue culture would provide means of rapid propagation and conservation of the plant species and from the point of view of phytochemistry, give scope for enhancement of the quality and quantity of the bioactive secondary metabolites occurring in the plant.

KEYWORDS: Vitex negundo; Health disorders; Mosquito repellent property; Phytochemistry.

INTRODUCTION
The world is gradually turning to herbal formulations which are known to be effective against a large repertoire of diseases and ailments. More importantly, they are not known to cause any notable derogatory effects and are readily available at affordable prices. However, adding a note of caution stating that plant remedies are effective and without side-effects, provided they are selected properly and taken under proper medical supervision. The active component, most often a secondary metabolite, varies in quality and quantity for a given plant species growing in different locations. The market value of such plants depends on their active content rather than merely their luxuriant growth. Plants are rich source of bioactive organic chemicals and offer an advantage over synthetic pesticides as these are less toxic, less prone to development of resistance, and easily biodegradable. Many of the herbs and shrubs are found to have promising medicinal properties, mosquito larvicidal and mosquito repellent properties. Owing to the fact that application of synthetic larvicide has envenomed the surroundings as well as non-target organisms, natural products of plant origin with insecticidal properties have been tried as an indigenous method for the control of a variety of insect pests and vectors in the recent past. Long before the
advent of synthetic insecticides, plants and their derivatives were being used to kill the pests of agriculture, veterinary and public health importance. Insecticidal activity of plant-derived compounds has been evaluated and few of these exploited commercially [1]. Laboratory and field trials of plant extracts and purified chemicals showed mosquito larvicidal activity. In spite of several advancements in the field of synthetic drug chemistry and antibiotics, plants continue to be one of the major raw materials for drugs treating various ailments of humans. Clinical and pharmaceutical investigations have in fact elevated the status of medicinal plants by identifying the role of active principles present in them and elaborating on their mode of action in human and animal systems [2].

Insecticides of plant origin have been extensively used on agricultural pests, and to a very limited extent, against insect’s vectors of public health importance, which deserve careful and thorough screening. The use of plant extracts for insect control has several appealing features, as these are generally more biodegradable, less hazardous, and rich storehouse of chemicals of diverse biological activity [3]. Moreover, herbal sources give a lead for discovering new insecticides. Therefore, biologically active plant materials have attracted considerable interest in mosquito control programmes in the recent times. The present 7 study deals with the screening of locally available herbs and shrubs for mosquito larvicidal properties. *Vitex negundo* (Family-Verbenaceae) is a hardy plant, flourishing mainly in the Indian subcontinent. All parts of the plant, from root to fruit, possess a multitude of phytochemical secondary metabolites which impart an unprecedented variety of medicinal uses to the plant. It is interesting to note that a single plant species finds use for treatment of a wide spectrum of health disorders in traditional and folk medicine; some of which have been experimentally validated [4]. The plant is a component of a number of commercially available herbal formulations and has also shown potential as an effective bio-control agent. Employment of techniques such as cell and tissue culture would provide means of rapid propagation and conservation of the plant species and, from the point of view of phytochemistry, give scope for enhancement of the quality and quantity of the bioactive secondary metabolites occurring in the plant. It belongs to kingdom plantae, order lamiales, family verbenaceae, genus *Vitex* and species *negundo*. This genus consists of 250 species of which about 14 species are found in India and some have commercial and medicinal uses. It is commonly known as Five-leaved Chaste tree or Monk’s Pepper is used as medicine fairly throughout the greater part of India and found mostly at warmer zones and ascending to an altitude of 1500 m in outer Western Himalayas [5]. The leaf and its extract with various solvents like alcohol, hexane, ether, acetone, chloroform etc can test for mosquito repellent properties.

**Botanical description**

It is a much branched aromatic or sometimes a smaller slender tree with quadrangular, densely whitish tomentose branchlets upto 4.5 to 5.5 in height. Bark is thin, yellowish gray; leaves 3-5 foliolate; leaflets lanceolate; terminal leaflets 5-10 x 1.6-2.3 cm, lateral one smaller, all nearly glabrous. Upper surface of leaves are green and the lower surface are silvery in colour. Flower is bluish purple, black when ripe, where as root is cylindrical, long woody, tortuous with gray brown colour [Prasad and wahi, 1965]. Plant oil was effective in checking insect infestation. They
show anti-inflammatory, antibacterial and antifungal activity. It is abundant along river banks, in moist situation, open wastelands & near deciduous forests. It thrives in humid places or along water courses in wastelands and mixed open forests and has been reported to occur in Afghanistan, India, Pakistan, Sri Lanka, Thailand, Malaysia, eastern Africa. It is grown commercially as a crop in parts of Asia, Europe, North America and the West Indies [6].

**Medicinal importance of plant:**
Herbal medicine, rather than merely curing a particular disease, aims at returning the body back to its natural state of health [16]. The phytochemical components of medicinal plants often act individually, additively or synergistically in improvement of health. After having analyzed the various chemical components present in different parts of *Vitex negundo*, it is imperative that focus shifts to the medicinal applications of the plant. Myriad medicinal properties have been ascribed to this plant and the plant has also been extensively used in treatment of a plethora of ailments. These properties have been categorized under three heads – traditional medicine, folk medicine and pharmacological evidence.

**Traditional medicine:**
Traditional medicine mainly comprises of Indian Ayurveda, Arabic Unani medicine and traditional Chinese medicine. In Asia and Latin America, populations continue to use traditional medicine as a result of historical circumstances and cultural beliefs. Traditional medicine accounts for around 40% of all health care delivered in China. Up to 80% of the population in Africa uses traditional medicine to help meet their health care needs.

**a) Ayurveda:**
The plant finds mention in the verses of the *Charaka Samhita* which is unarguably the most ancient and authoritative textbook of Indian Ayurveda. *Vitex negundo* has been designated as an anthelminthic and is prescribed as a vermifuge in the exposition on the *Charaka Samhita*. Other 11 Ayurvedic uses of Vn are described by Tirtha. People sleep on pillows stuffed with Vn leaves to dispel catarrh and headache and smoke the leaves for relief. Crushed leaf poultice is applied to cure headaches, neck gland sores, tubercular neck swellings and sinusitis. Essential oil of the leaves is also effective in treatment of venereal diseases and other syphilitic skin disorders. A leaf decoction with *Piper nigrum* is used in catarrhal fever with heaviness of head and dull hearing. A tincture of the root-bark provides relief from irritability of bladder and rheumatism.

**b) Unani medicine:**
Here the seeds are administered internally with sugarcane vinegar for removal of swellings [13]. Powdered seeds are used in spermatorrhoea and serve as an aphrodisiac when dispensed along with dry *Zingiber officinale* and milk.

**c) Chinese medicine:**
The Chinese Pharmacopoeia prescribes the fruit of Vn in the treatment of reddened, painful, and puffy eyes; headache and arthritic joints [17].

**CONCLUSIONS**
*Vitex negundo* represents a class of herbal drug with very strong conceptual or traditional base as well as strong experimental base for its use.
Thus this plant has great potential to be developed as a drug by pharmaceutical industries.

The essential oil as well as powder is having excellent mosquito repellent properties.

Partial analyses of the constituents are done.

Insect repellent properties of the leaf are also proved.

FUTURE WORK

The mixture is acting as mosquito repellent but to increase its effectiveness, the actual constituent of the extract is to be identified and steps can be taken to synthesize the compound.

To find the toxicity of the extract.

The toxicity test can be conducted only when the composition and constituents are known.

REFERENCES