

VITEX NEGUNDO: Medicinal Values, Biological Activities, And Phytopharmacological Actions

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Abstract:

The woody plant *Vitex negundo* is primarily found in the Indian subcontinent and its surrounding nations. *Vitex negundo* Linn belonging to the Verbenaceae family. Since ancient times, it has been utilized in Roman and Ayurvedic medicine as a feminine treatment and to treat pain. It was dubbed the "chaste berry tree."

Almost all the parts of the plant possess great amount of phytochemical secondary metabolites that give unparalleled variety of medicinal uses of the plant. It has been reported to possess strong pharmacological properties like anti-inflammatory, anti-rheumatic, antibiotic, antioxidant, anticonvulsant, oxidative stress, anti-androgen, and anti-allergic activities.

Keywords: *Vitex negundo* Linn., anti-inflammatory, Phytochemistry, Pharmacological evidence, medicinal Values

ABBREVIATIONS:

Vn - *Vitex negundo*

INTRODUCTION:

Medicinal plants have been a significant origin of therapeutic compounds to medicate human diseases since ancient times. (1) A framework for the creation of innovative drug molecules from diverse plant sources is provided by the assessment of plant products according to their therapeutic and medicinal qualities. (5) The *Vitex negundo*, also called the five-leaved chasteberry or Nirgundi in Hindi (English), is a significant plant that is a member of the verbena family. (4). According to Ayurveda, one of the ancient uses of *Vitex negundo* is to promote mental tranquility. (6)

The qualities and therapeutic applications of several herbs are described in all of the traditional Ayurvedic literature. The Nirgundi, *Vitex negundo*, is mentioned in practically all traditional Ayurvedic writings. (5) The term "Nirgundi" in Sanskrit refers to a plant or other material that shields a person from illness (7). In several traditional systems, including Unani, Ayurveda, Siddha, and Chinese medicine, *Vitex negundo* is a purported plant with therapeutic properties. (7)

The biological activities of *Vitex negundo* are attributed to its rich array of bioactive compounds, including flavonoids, alkaloids, terpenoids, and essential oils. These compounds contribute to its wide spectrum of pharmacological actions, such as antioxidant, antimicrobial, anti-inflammatory, and immunomodulatory effects. (cGPT)

Taxonomic Classification

Kingdom	- Plantae - Plants
Subkingdom	- Tracheobionta – Vascular plants
Super Division	- Spermatophyta – Seed plants
Division	- Magnoliophyta – Flowering plants
Class	- Magnoliopsida – Dicotyledons
Sub Class	- Asteridae
Order	- Lamiales
Family	- Verbenaceae – Verbena family
Genus	- Vitex
Species	- Vitex negundo Linn. – (Chastetree)

MICROSCOPICAL CHARACTERS:

Root: Woody roots that are 8–10 cm in diameter and have a rough, brownish exterior due to longitudinal fissures and tiny rootlets. The corky section of the bark is easily scraped off due to its thinness. (3)

Stem Bark: Bark is found in 0.3–0.5 cm thick, channeled pieces with a yellowish grey, rough, lenticular, longitudinally channeled outer surface. Transversely cracked; smooth, blackish, and darker on the inside than the outside; short, splintery fracture; faintly bitter flavour. (3)

Leaf: The leaves are palmately compound, with a petiole that is 2.5–3.8 cm long and 3-5 foliates. The texture is leathery, and the surface is glabrous above and tomentose below. The odor is agreeably aromatic. (3)



Fig.1. *Vitex negundo*- Stem with leaves



Fig. 2 *Vitex negundo*- Flowers with Buds



Fig.2 *Vitex negundo*-Five-leaved Chaste tree

Medicinal importance:

Herbal medicine aims to cure a particular illness while also restoring the body to its natural, healthy state. The secondary plant compounds found in medicinal plants frequently have a positive impact on health either by themselves, in conjunction with other substances, or in a synergistic manner. Following an analysis of the many chemical elements present in its different servings, attention needs to shift to *Vitex negundo*'s therapeutic use. Numerous medicinal qualities have been treated with the herb *Vitex negundo*. (4)

Pharmacological Profile:

Between 14 and 28 percent of higher plant species are thought to be utilized medicinally. *Vitex negundo* has several phytochemicals as secondary metabolites in almost every part of the plant, from the roots to the fruits, which give the plant a range of therapeutic applications. Nowadays, medicinal plants with proven healing qualities are popular. Therefore, there is a pressing need for their accurate identification and usefulness. (8)

Anti-Inflammatory Activity:

In models of cotton pellet granuloma and carrageenin-induced hind paw edema, the anti-inflammatory effects of phenbutazone and ibuprofen were markedly enhanced by the sub-effective dosage of *Vitex negundo*. (1)

Anti- oxidant activity:

The herb *Vitex negundo* contains natural antioxidants. The primary cause of the antioxidant properties of plant extracts is their phenolic constituents, which include flavonoids, phenolic acid, tannins, and diterpenes. They can be consumed by both humans and animals. (4)

Antimicrobial activity:

The antibacterial activity of *V. negundo*'s aqueous leaf extract was demonstrated against *Escherichia coli*, *Klebsiella pneumoniae*, and *Staphylococcus aureus*. The antibacterial qualities of the methanolic extract of *V. negundo* leaves were evaluated against *Klebsiella*, *Enterococci*, *S. aureus*, and *E. coli*. (7)

Antioxidant Activity:

Substances known as antioxidants play a crucial part in the body's defense mechanism. Even at very low concentrations, it prevents or postpones the oxidation process. (7) The plants' antioxidant components function as radical scavengers, preventing free radicals from producing health issues for people, such as cancer, heart disease, aging, etc. (7)

Other Pharmacological Activities:

Other pharmacological properties of the different Vn extracts include anxiolytic activity, anti-diarrheal action, hepato protective effect, and so forth. (2)

Insecticidal and Pesticidal activities:

The plant products of *V. negundo* are said to have insecticidal activity against pests that feed on stored goods, house flies, mosquito larvae, and tobacco leaf-eating larvae. When applied to stored items, the plant's leaf oil has been shown to have pest-repelling properties. (4)

THERAPEUTIC INDICATION:

Bad-smelling discharge is treated with the leaf juice. They have antibacterial, antifungal, and anti-inflammatory properties. The plant's antibacterial, antifungal, and anti-inflammatory qualities make it beneficial for wound care and skin ailments. *Vitex negundo* eases joint and muscular discomfort

- Vaginal discharge can be effectively treated with the herb.
- It treats coughing.
- It helps with rectal prolapse, asthma, and leprosy.
- Dry fruit powder is taken orally to relieve headaches and backaches.
- It helps with rectal prolapse, asthma, and leprosy.

. Phytopharmacological Actions:

- **Antimalarial:** The plant has been found to exhibit antimalarial properties, likely due to the presence of essential oils and other compounds that can interfere with the lifecycle of the *Plasmodium* parasite.
- **Neuroprotective Effects:** *Vitex negundo* is believed to have neuroprotective properties, which may help in preventing or managing neurodegenerative diseases like Alzheimer's. It can improve cognitive function and may protect neurons from damage.
- **Antispasmodic:** The plant's antispasmodic effects make it helpful in the treatment of muscle cramps, menstrual cramps, and gastrointestinal spasms.
- **Adaptogenic:** *Vitex negundo* is known to possess adaptogenic properties, which help the body cope with stress and improve resilience against mental and physical strain.
- **Hormonal Balance:** *Vitex negundo* has been traditionally used for its hormonal balancing effects, especially in women. It can be used to manage menstrual disorders, alleviate symptoms of menopause, and regulate hormonal levels.
- **Wound Healing:** The leaves of *Vitex negundo* are applied topically to promote the healing of wounds and skin ulcers. The plant's antibacterial and anti-inflammatory properties support tissue repair and prevent infection.
- **Digestive Aid:** *Vitex negundo* helps with digestive problems such as indigestion, bloating, and constipation. It is also used as a remedy for stomach aches and as an anti-gas agent.
- **Cardiovascular Benefits:** *Vitex negundo* may have beneficial effects on cardiovascular health by helping to lower blood pressure and reducing cholesterol levels, although more research is needed in this area.

Conclusion:

Vitex negundo is a potent medicinal plant with a wide range of biological activities and therapeutic uses. Its compounds contribute to its diverse pharmacological actions, including anti-inflammatory, antioxidant, antibacterial, antifungal, analgesic, and anti-diabetic effects. Though the plant has shown promising benefits in traditional and modern medicine, further studies are required to fully understand its mechanisms and to standardize its therapeutic use.

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