

A MULTIFACETED FIVE LEAVE CHASTE TREE (VITEX NEGUNDO) – A REVIEW

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ABSTRACT

In *Ayurveda*, *nirgundi* has been used as a medicine since ancient times. It is taken in a variety of ways, both internally and externally. The whole plant, leaves, leaf oil, roots, fruits, and seeds are administered in the treatment of specific disorders. Owing to wide range of medicinal properties, *Nirgundi* is very useful herb. It is used for its medicinal values for thousands of years by the people all over the globe. The folklore healers use the plant for various ailments. As per *Ayurvedic* system of medicine, its *Rasa is Katu, Tikta* and *Kashaya* and it pacifies *Vata and Shleshma*. Its property is *Laghu and Veerya* is *Sheetoshna* and is used in the treatment of various disorders like *Pleeha rog, Gulma, Krimi, Kushtha, Vrana, and Aruchi*. True to its meaning in Sanskrit (that which keeps the body free from all diseases), it is used to treat a plethora of ailments, ranging from headache to

migraine, from skin infections to wounds, and swelling, asthmatic pains, male and female sexual and reproductive problems. Review of the available literature showed that it possesses various pharmacological activities like cardiogenic, anti-inflammatory, analgesic, anti-histaminic, anti-cancerous, anxiolytic, anti-asthmatic, hepatoprotective etc. All these properties have been authenticated by various experimental and clinical studies.

KEYWORDS: *Nirgundi*, *Ayurveda*, disorders, anti-inflammatory, hepatoprotective.

INTRODUCTION

Ayurveda is the science of living. It deals with the prevention of diseases, promotion of health, longevity and cures the diseases. *Nirgundi* is a Sanskrit word, which means it protects the body from infections.^[1] The botanical name of *Nirgundi* is *Vitex negundo* and it belongs to the family Verbenaceae. This herb finds place in all the Samhitas of Ayurveda. Bhavapraksh has described two varieties; One is *Nirgundi* and second is *Sindhuvaara*. *Vitex negundo* Linn. is an aromatic shrub which may grow into a small tree. It is woody and it thrives well in humid places or along the water courses in wastelands. It is also found to grow well in mixed open forests. It is reported to occur in Afghanistan, India, Pakistan, Sri Lanka, Thailand, Malaysia and Eastern Africa.^[2] The plant usually bears tri-foliolate or penta-foliolate leaves on the branches which are quadrangular and which give rise to bluish-purple and whitish flowers in branched tomentose cymes. The plant grows all over India, and is commonly cultivated as a hedge plant. The fruits of the plant are ovoid, four sided drupes, black when ripe.^[3] A popular local quote of the Bengalis in the Western Himalayan region of India which translates as - A man cannot die of disease in an area where *Vitex negundo* Linn, *Adhatoda vasica* and *Acorus calamus* are found. The plant is referred in the Indian traditional circles as “*sarvaroganivarini*” (the remedy for many diseases).^[4]

PLANT DESCRIPTION

Vitex negundo Linn is a woody, erect and large aromatic deciduous shrub which grows to small tree of height 2-8 m height. The bark is usually reddish brown. The leaves are penta foliate and the leaflets are arranged palmately and terminal leaflets are long (4-10 cm) acute with petiolate (1-1.3 long), lanceolate, hairy beneath and both the ends are pointed. The flowers are numerous which are bluish purple in colour and in branched in tomatoes cymes and the fruits are round, succulent and black on ripening with four seeds.^[5] *Veerya* is *Sheetoshna*. According to the description available in Ayurvedic texts, *Nirgundi* possesses *Krimighna* and *Vishghna* properties. Flowers of the plant pacify Pitta. Sushrut has classified *Nirgundi* in the group *Sursaadi Gana*, the herbs of which pacifies *Kapha*, are wormicidal, helpful in *Pratishyaaya*, *Aruchi*, *Kaasa*, treatment of *Krimi*, *Kushtha* and *Ruja*, and alleviates *Pleeha rog*, *Gulma* and *Aruchi*. It is intellect promoting, good for eyes, carminative, good for hair health, and is antitoxic.^[6]

Vernacular names

English	Five leaved chest tree ^[7]
Hindi	Sambhalu, Samhalu, Nirganda, Nisinda, Shivari, Sandura, Sinura ^[8]
Bengali	Nishin ^[9]
Marathi	Lingada, Nirgundi, Nigada ^[10]
Punjabi	Banna, Bharwan, Maura, ^[11]
Gujrati	Nagoda, Nagad, ^[12]
Telagu	Vavili, Tellavavili ^[13]

Ayurvedic properties

Rasa	Katu, Tikta ^[14]
Guna	Laghu, Rooksha ^[15]
Veerya	Ushna ^[16]
Vipaka	Katu ^[17]

Parts used: Root, leaves, flowers, fruits, bark.^[18]

NIRGUNDI/ SINDHUVARA MENTION IN CHARAK-SAMHITA

1. SUTRA STHANA^[18]

Drug	Formulation	Part Used	Mode Of Administration	Reference
Shirish and <i>Sindhuvara</i>	Vishaghna Lepa	Bark	Lepa	Ch.su.3/28
Akshiva, Marich, Gandir, Kebuk, <i>Sindhuvara</i>	Krimighna Mahakashaya	Prayojyanga	Kashaya	Ch.Su .4/15
Haridra, manjishta, chandana, <i>sindhuvara</i> , sirisha etc	Vishaghna gana	Prayojyanga	Lepa	Ch.Su. 4/16

2. SIDHI STHANA^[19]

Drugs	Formulation	Part Used	Mode of Administration	References
Pippali, <i>nirgundi</i> , apámarga, sarsapa, vartaakurasa, aragvadha etc	Pippalyadi Varti	Patra	As suppository in urethral passage & anus.	Ch.Si.9/57-61
kumkuma <i>sindhuvara</i> , tagara, mamsi, khadira, brihati, lodra, madhuka, haritala etc	Mrithasanjeevana Agada	Patra	Gulika, dhoopana, lepa	Ch.Si 23/54-60
Vidanga, eranda, triphala, <i>nirgundi</i> , bilva, brhathi, goksura, nimbi, karavira etc.	Vidangadhi Taila	Patra	Medicated oil for pana, abhyanga and anuvasana vasth	Ch.Si 4/18-22

3. CHIKITSA STHAN^[20]

Drugs	Formulations	Part Used	Mode of Administration	References
Patra, agaru, mustha, suradaru, kushta, <i>sindhuvara</i> , rajani, gairika, nimba manjishta, laksha etc	Mahagandhahasti Agada	Prayojyanga	As anjana, external application over vrana, guda, yoni	Ch.Chi.23/77-82
<i>Sindhuvara</i> , sveta and girikarnik	Root	Prayojyanga	Pana in visha, nasya in kushta	Ch.Chi. 23/195.
Candara, padmaka, usira, sirisa, <i>sindhuvarika</i> , ksirasukla, tagara, kustha patala, udijya, sariva etc	Chandanadhi lepa	Prayojyanga	External application	Ch.Chi. 23/200-201
Yastimadhu, mrdvika, payasya and <i>sindhuvarika</i>		Prayojyanga	Internal administration	Ch.Chi.30/271
<i>Nirgundi</i>	Nirgundi Taila	Moola, patra	Effectiva in kushta, pama, apachi Taila for pana, abhayanga & poorana	Ch. Chi 28/134-135

4. VIMANASTHANA^[21]

Drugs	Part used	Mode of administration	References
Bhringaraja, sahadara, <i>nirgundi</i> , kutaja, triphala etc	Prayojyanga	Pupalika	Ch. Vi. 7/21

NIRGUNDI/SINDHUVARA MENTIONED IN SUSHRUTA SAMHITA

1. SUTRA STHAN^[22]

Drugs	Formulations	Part used	Mode of administration	References
Surasa, kasamarda, <i>nirgundi</i> , indura, arjaka, vidanga etc	Surasadi gana	Prayogyanga	According to condition	Su.Su 38/16
<i>Sindhuvaraka</i>		Pushpa	According to condition	Su.Su. 46/ 286.

2. CHIKITSA STHAN^[23]

Drugs	Formulations	Part used	Mode of administration	References
<i>Nirgundi</i> , jati barihista, jimutaka etc		Prayogyanga	Taila (For vama)	Su. Chi. 18/ 21
Leaves of aragvada pasted with juice of <i>nirgundi</i> etc		Prayogyanga	Varti	Su.Chi. 37/120-121
Triphala, ativisa, Trivrit, surasadi gana, kushta, nimbi, guduchi etc	Triphaladi Taila	Prayogyanga	For pana, abyanga, gandoosa, nas ya, basti	Su.Chi 37/33-35

3. KALPA STHAN^[24]

Drugs	Formulations	Part Used	Mode of administration	References
Prapoundarika, <i>sindhuvaraka</i> , suradaru, musta, candana, guggulu	Tarkshya Agada	Prayojyanga	Churna	Su.Ka. 5/64-67
Draksha, surasa, bilwa, <i>sindhuvaraka</i> , dadima, gairika etc	Drakshadhi Agada	Prayojyanga	Churna	Su.Ka. 5/76-77
Somraji, kushta, <i>sindhuvaraka</i> , punarnava, aragvadha sirisha etc.	Ekasara Gana	Pushpa	according to condition	Su.Ka. 5/83-85
Chandana, kushta, nagara, gairika, bala, <i>sindhuvar</i> , sirisa, patali, salmali etc	Mahasugandhi Agada		Churna	Su.Ka 6/14-27
Mudgaparni, mashaparni, <i>sindhuvara</i> etc		Prayojyanga	Kashaya	Su.Ka. 7/20

4. UTTARA STHAN^[25]

Diet	Part used	Mode of administration	References
Patola, selu, sunishana, tuthika, <i>sindhuvara</i> , atimukta etc	Prayogyanga		Su.Utt. 45/16
<i>Sindhuvara</i> , bilva, kapittha, arjaka etc. -	Prayogyanga	Anjana	Su. Utt. 11/11
<i>Nirgundi</i>	Prayogyanga	Karnapoorana	Su.Utt. 21/50
<i>Nirgundi</i>	Prayogyanga	Suitable form	Su.Utt. 52/29

Chemical Constituents of Nirgundi Plant^[26-27]

- LEAVES - Vitamin-C, artemetin, terpinen-4-ol, α -terpineol, sabinene, globulol, spathulenol, β -farnesene, farnesol, carotene, casticin, 5-hydroxy-6, 7, 8, 4'-tetramethoxy (gardenin B), linalool, stearic acid, 5-hydroxy-3, 6, 7, 3', 4'-pentamethoxy flavone, 5-hydroxy-3, 7, 3', 4'-tetramethoxy flavones, betulinic acid, ursolic acid.
- SEEDS - β -sitosterol, p-hydroxybenzoic acid, 5-oxyisophthalic acid, artemetin, vitedoin A, vitedoamine A, vitedoin B, 2 β , 3 α -diacetoxyoleana-5, 12-dien-28-oic acid, 3 β -acetoxyolean-12-en-27-oic acid, n-tritriacontane, n-hentriacontane, n-pentatriacontane
- STEM AND BARK -3, 6, 7, 3', 4'-Pentamethoxy-5-Oglucopyranosylrhamnoside, vitexin cafeate, 4'-O-methyl myricetin- 3-O-[4'-O- β -D-galactosyl]- β -Dgalactopyranoside, β -amyirin, epifriedelinol, oleanolic acid, p-hydroxybenzoic acid, β -sitosterol.

4. ROOTS- Vitexin and isovitexi, vitexoside, negundin A, negundin B, 6-hydroxy-4-(4-hydroxy-3-methoxy)-3-hydroxymethyl-7-methoxy-3, 4-dihydro-2-naphthaldehyde, 2 β , 3 α -diacetoxyoleana-5, 12-dien-28-oic acid.

Pharmacological Activities

1. Effect on oxidative stress

Leaf extracts of vitex negundo were determined to possess anti-oxidant potential. The extracts were useful in decreasing levels of superoxide dismutase, catalase and glutathione peroxidase in Freund's adjuvant induced arthritic-rats. The extracts also possess the ability to combat oxidative stress by reducing lipid peroxidation owing to the presence of flavones, vitamin C and carotene. Rooban et al. evaluated the antioxidant and therapeutic potential of vitex negundo flavonoids in modulating solenoid-induced cataract and found it to be effective.^[28]

2. Anti-inflammatory Activity

Anti-inflammatory activity of ethanolic roots extract of Vitex negundo by carrageenan induced rat paw oedema method for acute inflammation. The ethanolic extract of vitex negundo has showed related activity to that of standard drug. This study showed that the ethanolic extract exhibited remarkable anti-inflammatory activity to standard drug of Indomethacin.^[29]

3. Antibacterial studies

Essential oils and successive ethyl acetate and ethanol extracts of Vitex negundo Linn. showed antibacterial activity against Staphylococcus aureus, Bacillus subtilis, Escherichia coli and Pseudomonas aeruginosa bacterial strains. Main constituents identified in leaves oil were dguaiene, carryophyllene epoxide and ethylhexadecenoate; In flowers oil α -selinene, germacren-4-ol, carryophyllene epoxide and (E)-nerolidol while fruit oil showed β -selinene, α -cedrene, germacrene D and hexadecanoic acid as the main constituents which help for antibacterial activity.^[30]

4. Enzyme-inhibitory activity

Root extracts of Vitex negundo Linn. showed inhibitory activity against enzymes such as lipoxygenase and butyrylcholinesterase, α -chymotrypsin, xanthine-oxidase and tyrosinase. Also reported the HIV type 1 reverse transcriptase inhibitory activity of the water extract of the aerial parts of Vitex negundo Linn.^[31]

Sindhuvara and its formulations in Visha chikitsa

As per Ayurvedic texts, *Sindhuvara* is renowned for its Vishaghna properties and hence it is included in many formulations used in poisoned person especially in Jangam visha (insect or animal bite poisoning).^[32]

DARVIKAR SARPA	Root of <i>Sindhuvara</i> along with Shweta root should be taken in snake poisoning or both drug should be taken along with honey and Kushtha for drinking and as nasal drop in snake poisoning.	Powder of <i>Sindhuvara</i> , Vacha and Aparajita should be taken with water.	Root of <i>Sindhuvara</i> macerated in its own juice, added with honey and consumed is the recipe for poison of hooded snakes.
MANDALI SARPA	An Agada (antidote formulation) is prepared with <i>Sindhuvara</i> , Drakshaa, Sarpagandha etc. with honey and taken in snake poisoning.		
SPIDER BITE	<i>Sindhuvara</i> along with Shirisha and many other drugs is used for eye application, drinking and as nasal drops in all kinds of spider bite	<i>Sindhuvara</i> along with Pippali, Priyangu, Nirgundi, Rasna, Vasaetc. are made into paste and applied in spider poisoning predominant of Kapha.	Use of <i>Sindhuvara</i> root, Selu, Arjuna, Amratakark is ideal in Rakta (red) spider bite.

DISCUSSION

Herbal medicines are in great demand in the developed as well as developing countries for primary healthcare because of their wide biological and medicinal activities, higher safety margins and lesser costs. *Nirgundi*, the *Vitex negundo*, is a very important herb which has been used for ages due to its medicinal values. *Vitex negundo* possesses a wide variety of bioactive molecules and nutrients, and it has a wide range of pharmacological properties and thus can be hope for the future in the preventive and curative medicine. Almost all parts of the plant are used in preparing herbal medicines. The plant is known to possess Anti-inflammatory, Anti-fungal, Anti-oxidant, Anti-hyperpigmentation, Hepatoprotective, Antihistaminic, Analgesic and related activities. So it is essential and needful for all of us to plant a *Nirgundi* in our surrounding for the betterment of our present as well as coming generations also.

CONCLUSION

In recent year, traditional & ethnobotanical uses of natural compounds, especially plant origin receive much attention as they were well tested for their efficacy generally believed to be safer for human use. *Nirgundi* is one of the most used herbal plants in the field of Ayurveda. It has been widely used externally as well as internally. Thorough screening of the literature available on Nirgundi (*Vitex negundo* Linn.) depicted the fact that it is a popular remedy. The merit of the traditional use of Nirgundi has also been supported by the isolation and identification of several possible active chemical constituents, mainly flavonoids etc from different parts leaves and twigs, bark, seeds and roots. The plant holds great promise as a commonly available medicinal plant and it is indeed no surprise that the plant is referred to in the Indian traditional circles as '*sarvaroganivarini*' – the remedy for all diseases.

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