

COMPREHENSIVE REVIEW ON NIMBA (*AZADIRACHTA INDICA* A. JUSS)**Prajwal C. R.*¹, Nisarga K. S.² and Anuradha K. N.³**

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ABSTRACT

Nimba is one of the useful plants mentioned in *Ayurvedic* literature since ancient era. *Nimba* belongs to the family Meliaceae which is found in abundance in tropical and semitropical region. *Nimba* has been renowned for healing, as it is packed with antibacterial, anti-inflammatory, antiparasitic, analgesic, wound healing and antifungal properties that not only gives benefits to health but also solves many beauty problems. All five parts of *Nimba* (root, bark, leaf, flower, fruit) have been used in compendia separately or collectively (*Panchanga*) in various ailments. The drug shows wide therapeutic and folklore use. Various names have been attributed to it in the classics. The single use of the drug and its use in compound formulations is mentioned in *Brhatrayi* and *Nighantus* of *Ayurveda*. The present work aims to obtain a comprehensive review on *Nimba* from *Ayurvedic* scriptures and online sources, highlighting its extensive use in managing various health conditions.

KEYWORDS: *Ayurveda*, *Nimba*, *Azadirachta indica*, Phytochemicals, Therapeutic potential.

INTRODUCTION

Ayurveda deals with innumerable drugs with its complete description and therapeutic utility. Herbs are also a good source of nutraceuticals, food supplements, pharmaceutical intermediates. The side effects of modern medicine and highly developed drug resistance

have built up trust on medicinal plants for herbal cure against the dangerous and infectious diseases.^[1] *Nimba* (*Azadirachta indica*) belonging to family Meliaceae is one of the important medicinal plants found throughout India. It acquires wide range of pharmacological action i.e. anti-inflammatory, antidiabetic, spermicidal, antibacterial, mosquito-repellent activity, anti-allergic, anthelmintic, antidermatic, analgesic, antiulcer, anti-viral, antifungal, insecticidal, anti-malarial, larvicidal, antioxidant.^[2] *Nimba* plant is attributed with various medicinal properties like *Kushtaghna*, *Krimighna*, *Kandughna*, *Raktashodhaka*, *Vranaropana*, *Vishaghna* and *Shophahara*.^[3] This review aims to compile all available literature on *Nimba* from Vedic era till date.

HISTORICAL BACKGROUND

The Sanskrit word 'Nimba' etymologically indicates a tree which endows a good health, without untoward effects & is useful in dermatoses. It has been used in India throughout the ages. On the New year day, according to Hindu calendar, it is a custom to eat few tender leaves of *Nimba* along with jaggery. It is believed that it prevents the diseases of *Kapha dosa*. Even now many Indians continue the practice. It is one of the most powerful blood purifiers & detoxifier among traditional herbs.^[4]

NIRUKTI^[5]

निम्ब- निर्व्वति स्वास्थ्यम् । णिवि सेवने'

Nimba is a very useful drug, which maintains health.

VERNACULAR NAMES^[6]

Sanskrit- *Nimba*; English- Indian Lilac, Margosa tree; Hindi- *Nimba*; Kannada- *Bevu*; Malayalam- *Aaruveppu*; Marathi- *Kadunimb*; Tamil- *Vempu*; Telugu- *Vemu*.

BOTANICAL NAME: *NIMBA* (*Azadirachta indica* A Linn.).

Family: Meliaceae.

Table 1: Synonyms (Paryaya). [7],[8],[9],[10],[11],[12],[13],[14]

Synonyms	B.P.NI	K.NI	R.NI	A. R	D.NI	A. K	M.N	Ni. A
<i>Nimba</i>	+	+	+	+	+	+	-	+
<i>Arista</i>	+	+	+	+	+	-	-	+
<i>Pichumarda</i>	+	+	+	+	+	-	-	-
<i>Prabadra</i>	+	+	+	-	+		-	+
<i>Tiktaka</i>	+	-	-	-	-	-	-	-
<i>Paribadra</i>	+	+	+	+	+	-	-	-
<i>Hinguniryasa</i>	+	-	+	+		-	-	-
<i>Sutiktaka</i>	-	+	-	+	+	+	-	-
<i>Subadea</i>	-	+	-	+		-	-	-
<i>Sarvatobadra</i>	-	+	+	+	+	+	+	-
<i>Krmighna</i>	-	+	-		-	-	-	-
<i>Chardana</i>	-	+	+	+	-	+	-	-
<i>Neta</i>	-	+	+	-	-	-	-	-
<i>Yavanesta</i>	-	+	-	-	-	-	-	-
<i>Sukhapriya</i>	-	+	-	-	-	-	-	-
<i>Kakaphala</i>	-	+	-	-	-	-	-	-
<i>Visheeraparni</i>	-	-	+	-	-	-	-	-
<i>Pavanesta, Sheeta</i>	-	-	+	-	-	-	-	-
<i>Varatikta & Varatwacha</i>	-	-	+	+	-	-	-	-
<i>Aristaphala</i>	-	-	+	-	-	-	-	-
<i>Paribadraka</i>	-	-	+	-	-	-	-	-
<i>Peeshasara</i>	-	-	-	+	-	-	-	-
<i>Niyamana</i>	-	-	-	-	+	-	-	-

Table 2: Interpretation of synonyms. [15]

<i>Nimba</i>	That which gives health to patients
<i>Tiktakam</i>	Predominantly bitter
<i>Hinguniryasa</i>	The plant excudes gum like the Hingu
<i>Aristha</i>	The one which eradicates number of diseases
<i>Krimighna</i>	The one which kills worms and helminthis
<i>Kakaphala</i>	The one whose fruits are eaten by crows.
<i>Chardhana</i>	Induces vomiting / It can be use in curing of pittaja chardi
<i>Paribhadra</i>	It is used in almost the leading drugs
<i>Pichumardha</i>	One which cures the skin disease.
<i>Vranasodhakari</i>	It cleanses wounds
<i>Sutiktaka</i>	It is one of the best bitter drug.
<i>Sukapriya</i>	The parrots like the tree of <i>Nimba</i>
<i>Puyari</i>	It removes pus. It is enemy to the pus
<i>Niyamana</i>	The one which subsides the disease and maintains health.

Table: 3 Classification: (Vargeekarana)- According to Samhita and Nighantu

Text	Gana/Varga
Charaka samithas	Kandughna varga, Tiktakandaha
Susruta samithas	Aragvadedi varga, Guduchyadi varga, Lakshadi varga, Urdhwabhagahara varga
Astanga hrudaya	Aragvadedi varga, Guduchyadi varga, Lakshadi varga.
Bhavaprakasha niganthu	Guducyadi varga
Kaideva niganthu	Aushadi varga
Priya niganthu	Haritakyadi varga
Nigantu Aadarsha	Nimbadi varga
Dhanvantari Nighantu	Guducchyadi varga
Saligrama niganthu	Guducchyadi varga
Raja niganthu	Prabadhraka varga
Abhidana Ratnamala	Tikta Dravya skanda varga
Amara kosha	Vanoushadhi varga
Madhanapala niganthu	Abhayadi varga
Madhava Dravyaguna	Vividoushadhi varga

Table 4: Systemic Classification.^[16]

Order	Rutales
Suborder	Rutinae
Family	Meliaceae
Subfamily	Melioideae
Tribe	Melieae
Genus	Azadirachta
Species	Indica

HABITAT^[17] - A large, evergreen tree, commonly found throughout the greater part of India and often cultivated. The wood of this family emits a characteristic smell.

BOTANICAL DESCRIPTION^[18]: *Azadirachta indica* A. Juss.

Habitat - A large tree.

Root - Taproot and branched.

Stem - woody, branched solid, erect and cylindrical.

Bark - Channelled or quilled pieces of tough and fibrous bark ranging from 3mm to 10mm in thickness. Outer surface is greyish brown to black in colour, rough, scaly, irregularly fissured, especially in the bark obtained from older stems. Inner surface is creamish in colour, conspicuously laminated and coarsely fibrous. Transversely cut portion shows a smooth, minutely chequered surface. On breaking becomes fibrous, has got bitter and astringent taste.

Leaf - Compound, alternate, imparipinnate, exstipulate, pinnae are lanceolate, oblique, serrate, acuminate with unicostate reticulate venation. Leaflets when fresh are brightgreen but turn greyish on drying. Has got disagreeable odor. Taste is very bitter.

Inflorescence - Axillary panicle

Flower - Actinomorphic, bisexual, complete, bracteates, pedicellate, hypogynous, sepals are 5 and gamosepalous, petals are 5, polypetalous and white in colour, stamens are 10, gynoecium: tricarpeal, syncarpous, superior ovary.

Fruit - Drupaceous with one seed.



Fig. 1: Nimba a) Leaves b) Fruit c) Leaves with inflorescence.

USEFUL PARTS ^[17] - *Patra* (leaf), *Twak* (Bark), *Bija* (Seed), *Phala* (Fruit), *Pushpa* (flowers) and *Niryasa* (Resin).

Table 5: TYPES OF NIMBA. ^{[19],[20],[21],[22],[23]}

Charaka samitha	B.P Ni	D.Ni	R. Ni	Ni. A
Mahanimba Nimba	Mahanimba Nimba	Mahanimba Nimba	Kadunimba Mahanimba Kaidarya	Nimba Mahanimba

CONSTITUENTS^[24]

Leaves – Azadirachtin, Azadirachtanin, azadirone, *Nimbanodiol*, nimbin, nimbolide, polysaccharides, cyclictrisulphide, cyclictetrasulphide etc.

Stem bark – nimbin, nimbidin, nimbinin, sitosterol, kulinone, margosinolide, Margolone, margolonone and isomargolonone etc.

Root bark – nimbin, nimbidin, Galic acid, (-) epicatechin, catechin, Polysaccharides GIA, GIB, Polysaccharides G2A, G3A, NB-2 pepidoglucan.

Fruit – Azadirachtin, azadirachtol, azadirachnol, melinone, nimbiol, nimocin etc.

Seed oil – Sodium nimbidate, Azadirachtin, Nimbolide, Gedunin, Tocopherol, nimbin, nimbidin etc.

Flowers – Azadiradione, margosene, linoleic acid, arachidic acid etc.

RASA PANCHAKA OF NIMBA^[17]

- *Rasa-Tikta, Kasaya*

- *Guna-Laghu, Ruksha*
- *Veerya-Sheeta*
- *Vipaka-Katu*
- *Doshakarma-Kapha Pittahara*

Table 6: PROPERTIES OF NIMBA IN DIFFERENT NIGHANTUS.

		D.Ni	M.Ni	R.N	Bh.P.Ni	Sh.Ni	Ni.Ad	S.Ni	P.Ni
<i>Rasa</i>	<i>Tikta</i>	+	-	+	+	+	+	+	+
<i>Guna</i>	<i>Laghu</i>	+	+	-	+	+	+	+	+
<i>Virya</i>	<i>Sheeta</i>	+	+	+	+	+	+	+	-
<i>Vipaka</i>	<i>Katu</i>	-	+	-	-	+	+	+	+

KARMA^{[17],[25]}

Krimghna, Kustagna, Vranaghna, Kandughna, Rakta Sodhaka, Visaghna, Rucikara and Gulmanasaka.

Twak -Vranapachaka, Vranashodhaka, Pootihara

Dahaprashamaka -Kandughna, Kustaghna

Pachanavahasamstana- Krimighna

Swasanavahasamstana- Kasahara

Mutravahasamstana- Pramehaghna

INDICATIONS^[17]

Kusta, Krimi, Kandu, Gulma, Aruchi, Visharoga, Vrana, Prameha, Raktadusti, Trishna, Chardi and Shotha.

PHARMACOLOGICAL ACTIVITIES OF NIMBA^[25]

Anti-Inflammatory, Antibacterial, Anti-viral, Antifungal, Anti-diabetic, Wound Healing and Anti-cancerous.

RESEARCH ACTIVITIES

- 1. ANTIHELMENTHIC ACTIVITY:** Department of pharmacology, K G Medical college, Lucknow 1989; "Clinical assessment of Anthelmintic activities of some Indian medical plants "revealed Nimba is one among the two best drugs.
- 2. ANTI DIABETIC ACTIVITY:** Indian journal of pharmacy, 1978 revealed "Anti diabetic activity and hypoglycaemic activity in dogs"
- 3. ANTI FERTILITY HERBS:** MAPIS October, 1985, Neem oil as an ideal contraceptive if applied vaginally before coitus.

4. **ANTI PEPTIC ULCER HERBS:** Plant medica 1985, P 143-146; NIMBIDIN has Anti-ulcer, Anti-inflammatory, Anti arthritic and Analgesic
5. **INSECTICIDES, PARASITICIDES & PESTICIDES:** Acta Pharma Sinosa 1991, 36(1), 426-428 “Studies on constituents of *Melia azadirachta*” Fruit is Antifeedent against Cabbageworms- Isolated Melianonn and related compounds, Vanillic acid.

POSOLOGY (MATRA)^[17]

- *Churna* (powder) -2 to 4 gms
- *Kalka*(Paste) – 10 to 20gms
- *Kashaya*(decoction) – 50 to 100ml
- *Swarasa* (juice) – 10 to 20 ml
- *Taila*(oil) – 5 to 10 drops

AMAYIKA PRAYOGA^[26]

• *Kustha*

1. The combination of *Nimba* and *Patola* is efficacious in *Kusta* in various forms. (Cs.ci.7.97-99)
2. In *Kustha*, if the part is wounded and eaten by maggots, *Nimba* and *Vidanga* with cow's urine should be used as bath, intake and anointment. (Cs.ci.7.157)
3. One should take *Haritaki* and *Nimba* and *Amalaka* for month overcome all type of *Kusta*. (GN.2.36.99)

• *Prameha*

1. Decoction of *Nimba* is the specific remedy for *surameha*. (Ss.ci.11.9)
2. Decoction of bark, leaves, root fruit and flowers of *Nimba*, *Aragvadha*, *Saptaparna*, *Murva*, *Kutaja*, *Katphala* and *Palasa* destroys all types of *prameha*. (Ss.ci.11.8)

• *Vrana*

1. Decoction of *Nimba* leaves cleans the wound. (Cs.cs.25.34)
2. *Nimba* leaf mixed with honey acts as cleansing agent. Both them added with ghee promote healing. (Ss.ci.1.68)
3. *Nimba* mixed with *Hingu* should be applied. (B.P.ci 47.69)

Table 7: Formulation.

Yogas	Reference	Indication
Nimbadi churna	B.R. Vataraktadikara	Kusta, Vatarakta, Pandu
PanchaNimba churna	B.R Kushtadhikara	Ksudra kusta
Sudarsana churna	B.R Jwaladikara	Yakrt, Plihavridhi
GHRUTHA		
Jatyadi Ghrutha	A.H.U 25/67-68	Marmasrita vrana, Kledivrana
Pancatikta Ghrutha	B.R Kusadikara	Kusta, Dustavrana
Pancatikta Guggulu Ghrutha	A.H.Ci 21/57-58	Kusta, Arbuda, Sandigatavata
Patoladi Ghrutha	A.H.U 13/6-8	Vidhradi, Jwara, Timira
KWATHA CHOORNA		
Vasaguducayadi	Ah.Chi	Pandu, Raktapitta
Nimbadi	B.R Masurikaroga adikara	Visarpa, Masurika jwara
Pathayadi	Sha.Sam Ma.kha	Siroroga, Suryavartha
Argvadhadi	A.H.Ci	Vrana, Kusta, Arbuda
Punarnvastaka	Cakradatta.Sothocikitisa	Udararoga, Sarvanga sotha
TAILA		
Jatiyadi	Cha.chi	Nadivrina
Nimbadi	B. R	Twak roga 30
Mahavisagarbha	B. R	Vataroga, Grdhasi
Mahamarichyadi	S.Y.C	Kusta, Vrana, Pama
Mahanarayana	Cha.chi	Vatavyadi
LEPA		
Arshoghna	A.H. Chi 8/23	Arsha
Dhathuradi	B. R	Shlipada
Lichuladi	B. R	Vata galaganda
Punarnavadi lepa	B. R	Shotha
BHASMA		
Godanti	R. T	Agnimandya, shirashoola
Arogyavardini rasa	R. S	Vatakaphaja kusta
Vasaguduchyadi	Ah.ch	Pandu.kamala

DISCUSSION

Nimba (*Azadirachta indica* A Linn) is a fast-growing evergreen tree belonging to family Meliaceae commonly found in India. Stem bark, root, leaves, flowers and fruits are useful parts. Bark is Channelled or quilled pieces of tough and fibrous bark Outer surface is greyish brown to black in colour, inner surface is creamish in colour. Leaf - Compound, alternate, imparipinnate, exstipulate Has got disagreeable odor. Taste is very bitter. Inflorescence - Axillary panicle. Fruit – Drupaceous. Rasa-Tikta, Kasaya; Guna-Laghu, Ruksha; Veerya-Sheeta; Vipaka-Katu. It is Kapha Pittahara. It is attributed with various medicinal properties like *Kushtaghna*, *Krimighna*, *Kandughna*, *Raktashodhaka*, *Vranaropana*, *Vishaghna* and *Shophahara*. It has pharmacological activities like Anti-Inflammatory, antidiabetic,

antiarthritic, antipyretic, antifungal, antibacterial, antimalarial and wound healing. As it has wide range of pharmacological uses, it has been mentioned and used in India since ages.

CONCLUSION

Traditional system of medicine particularly the *Ayurveda* system of medicine is mainly depending on medicinal plants that are used in different ailments such as chickenpox, skin problems, wounds, blisters, boils and numerous illnesses as a consequence of viruses and micro-organisms. Various *Ayurveda* drugs have been proved their efficacy in skin disease. *Nimba* (*Azadirachta indica*) is one of the utmost important medicinal plants in *Ayurveda* traditional system of medicines that are used as a blood purifier in all blood impurities related diseases. So, the data compiled in present review can be used to design the further in vitro and in vivo scientific studies to explore the ethnomedicinal potential of *Azadirachta indica*.

REFERENCES

1. Chaguthi P, Mittal A, Singh S, Baghel DS. An overview on therapeutic potential of *Azadirachta indica*. *JETIR*, 2018 Dec; 5(12).
2. Aayushi. A therapeutic review of medicinal potential of *Nimba* (*Azadirachta indica*) in treatment of skin diseases. *Aayushi Int Interdiscip Res J (AIIRJ)*, 2019 Jun; 6(6).
3. The wealth of India; First supplement series (Raw materials) Vol-1A-C, 110page.
4. Warriar PK, Nambiar VPK, Ramanukutty C. Indian Medicinal Plant.Vol.1. Madras: Orient Longman, 1993; 185 PG.
5. Nighantu Adarsha, 2nd edition 1998, Chaukhambha Bharathi Academy, Varanasi, Vol 1 *Nimbadi* varga, Pp 271.
6. Kirtikar & Basu, Indian Medicinal Plants, Vol. 10, 2ndEdition, 2001, Oriental enterprises, Uttaranchal, P.3373.
7. Bhavamisra, Bhavaprakasha Nighantu Guduchyadi varga sloka 94-99. G.S. Pandey editor. 7th ed. Varanasi: Chowkhamba Bharati Academy, 1984; Pg 328-334.
8. Kaiyadeva, Kaiyadeva Nighantu Oushadha varga 1 sloka 878-85. P.V. Sharma editor. 1st ed. Varanasi: Chowkhamba Orientalia, 1979; Pg 163-164.
9. Pandit Narahari, Raj Nighantu pippalyadi varga sloka 7-12. Indradeo Tripathi editor. 2nd ed. Varanasi: Krishnadas Academy, 1998; Pg 266.
10. Abhidana Ratnamala (Sadrassa Nighantu). Tikta skanda dravya varga sloka, 21.
11. Dhanvantari, Dhanvantari Nighantu Guduchyadi varga 28-29 sloka. P.V. Sharma editor.1st ed. Varanasi: Chowkhamba Orientalia, 1982; p21.

12. Amarasimha's, Amarakosha Vol-II. Vanoushadi varga Sloka 62. Vishwnatha Ja, editor. 2nd ed. Delhi; Motilal Banarasi Das, 1979; Pg 49.
13. Madanapala, Madanapala Nighantu Abhyabi varga sloka 37-40. Ramprasad patiyala editor. 1st ed. Bombay: Khemaraj Shrikrishnadas Prakashan, 1988; Pg 25.
14. Bapalal G. Vaidya, Nighantu Adarsha Poorvardha *Nimbadi* varga. 1st ed. Varanasi: Chowkhamba Bharati Academy, 1984; Pg 271.
15. Sharma PV "Namarupajnaanam", 1st Ed, 2000. Varanasi, Satyapriya prakashan. Sri Taranath Tarka vachaspati, vachaspatyam, Vol.6. Chaukhamba series, 2003, edition.
16. An Overview on Therapeutic Potential of *Azadirachta indica* Prajwal Chaguthi, Amit Mittal, Saurabh Singh, Dileep Singh Baghel* 2018 JETIR, December 2018; 5(12).
17. Hedge L Prakash, A Harini. A text book of Dravyaguna vijñana, Volume 2, Varanasi: Chaukhamba Sanskrit sansthan; reprint, 2017; pg no 502.
18. Kritkar K. Rand Basu B.D. Indian Medicinal Plants, volume I. International Book distributors, book seller publisher, published by Lalith Mohan Basu India, 2005 edition.
19. Agnivesha, Charaka Samhita Vol- 1 (revised by charaka and Dridhabala) with commentary of Chakrapanidatta, Edited by Acharya Vidhydhara Shukla and Ravidatta Tripathi, Varanasi: Chaukhamba Sanskrit Pratishtan.
20. Acharya P.V Sharma and Dr Guruprasad Sharma, Dhanvantri Nighantu, guduchyadi varga sl no. 53-56, chaukhamba orientelia, Varanasi, 4th edition, 2005.
21. Bhavamishra, Bhavaprakash nighantu, haritakyadi varga, edited by, K.C.Chunekar and pandey G.S, chaukhamba Bharati Acaemy, reprint, 2004.
22. Dr Indradeva Tripathi, Rajanighantu, pippalyadi varga, Krishnadas Academy, Varanasi, 3rd edition, 2003.
23. Vaidya Bapalal. G, Nighantu Adarsha, 2nd edition 1998, Chaukhambha Bharathi Academy, Varanasi, 1: Pp 616.
24. Review Article Therapeutics Role of *Azadirachta indica* (Neem) and Their Active Constituents in Diseases Prevention and Treatment Mohammad A. Alzohairy Hindawi Publishing Corporation Evidence-Based Complementary and Alternative Medicine, 2016; Article ID 7382506, 11 pages.
25. P.V.Sharma, Dravyagunavijnana Vol-II. 16th Ed. Varanasi:ChaukhambhaBharati Academy, 1983; Pg 149-152.
26. Sharma P.V, Classical uses of medicinal plants, Chaukambha Viswabharti, Varanasi.