

## Health Benefits and uses of Neem Leaves (*Azadirachta Indica*)

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### Abstract:

Neem is a very unique tree and neem leaves are the most complex leaves on the planet. The neem tree has over 130 different biologically active compounds, and the neem leaf is one of the most complex leaves you can find on the planet. According to the ancient science of Ayurveda texts describe how neem treats skin disorders, hair problems, enhances appetite, boosts digestion, kindles the fire in the belly, improves breathing, helps manage diabetic conditions, aids healing of wounds and relieves nausea. Neem has been declared the “tree of the 21<sup>st</sup> century” by the United Nations. The US National academy of science also recognized neem’s medicinal value in its 1992 report entitled “Neem: A tree for solving global problems.”

**Keywords:** Biologically active, *Azadirachta indica*, Diabetes, Hypertension, Metabolic syndrome, Neem.

### Introduction:

Neem is a tree. The bark, leaves, and seeds are used to make medicine. Less frequently, the root, flower, and fruit are also used. Neem leaf is used for leprosy, eye disorders, bloody nose, intestinal worms, stomach upset, loss of appetite, skin ulcers, diseases of the heart and blood vessels (cardiovascular disease), fever, diabetes, gum disease (gingivitis), and liver problems. The leaf is also used for birth control and to cause abortions. The bark is used for malaria, stomach and intestinal ulcers, skin diseases, pain, and fever. The flower is used for reducing bile, controlling phlegm, and treating intestinal worms.

### Other Name(s):

*Antelaea azadirachta*, *Arishta*, *Arishtha*, *Azadirachta indica*, Bead Tree, Holy Tree, Huile de Neem, Indian Lilac, Indian Neem, *Lilas des Indes*, *Lilas de Perse*, *Margosa*, *Margosa Tree*, *Margousier*, *Margousier à Feuilles de Frêne*, *Margousier d'Inde*, *Melia azadirachta*, Neem Oil, Neem Tree, *Melia azadirachta*, Nim, Nimb, Nimba, Persian Lilac, Pride of China.

The fruit is used for hemorrhoids, intestinal worms, urinary tract disorders, bloody nose, phlegm, eye disorders, diabetes, wounds, and leprosy. Neem twigs are used for cough, asthma, hemorrhoids, intestinal worms, low sperm levels, urinary disorders, and diabetes. People in the tropics sometimes chew neem twigs instead of using toothbrushes, but this can cause illness; neem twigs are often contaminated with fungi within 2 weeks of harvest and should be avoided.

The seed and seed oil are used for leprosy and intestinal worms. They are also used for birth control and to cause abortions. The stem, root bark, and fruit are used as a tonic and astringent. Some people apply neem directly to the skin to treat head lice, skin diseases, wounds, and skin ulcers; as a mosquito repellent; and as a skin softener. Inside the vagina, neem is used for birth control. Neem is also used as an insecticide.

## USES

### Insufficient Evidence to Rate Effectiveness for...

- **Dental plaque.** Early research suggests that applying neem leaf extract gel to the teeth and gums twice daily for 6 weeks might reduce plaque formation. It also might reduce the number of bacteria in the mouth that can cause plaque. However, using a mouth rinse containing neem extract for 2 weeks does not appear to reduce plaque or gingivitis.
- **Insect repellent.** Early research suggests that applying extract of neem root or leaf to the skin helps repels black flies. Also, applying neem oil cream to the skin seems to protect against some types of mosquitos.
- **Ulcers.** Some research suggests that taking 30-60 mg of neem bark extract twice daily by mouth for 10 weeks helps heal stomach and intestinal ulcers.
- **Psoriasis.** Early research suggests that taking neem extract by mouth for 12 weeks, along with daily sun exposure and the application of a coal tar and salicylic acid cream, reduces the severity of psoriasis symptoms in people.
- **Fever.**
- **Upset stomach.**
- **Breathing conditions.**
- **Malaria.**
- **Worms.**
- **Head lice.**
- **Skin conditions and diseases.**
- **Heart disease.**
- **Diabetes.**
- **Birth control (contraception).**
- **Other conditions.**


### Properties of Neem:

Neem, due to its potential properties, has been used in Ayurvedic medicine for more than 4000 years. Neem products have several properties and might have applications in various fields making neem a green treasure.

- It may have anti-allergenic activity
- It may have anti-dermatic activity and may be helpful for skin diseases like acne eczema, psoriasis
- It may have anti-inflammatory activity
- It may have antipyretic activity (fever-reducing)
- It may have anti-scabies activity and may be helpful for scabies, an itchy skin condition
- It may have anti-diabetic activity
- It may have an anti-cancer potential
- It may have diuretic activity and may help the body get rid of extra fluid (by making more urine)
- It might have an insecticidal activity and may help in destroying or controlling insects
- It may have larvicidal activity and may help in killing larval pests
- It may have nematocidal activity and may help to kill nematodes (worms that live in soil)
- It may have anti-microbial activity and may help fight infection

## How to Use Neem?

Neem might be of potential use in several forms like neem oil, cake, twigs for oral care, leaf extract, extract from flowers and many other products derived from the neem tree. You must consult your Ayurvedic physician for advice on the form and dosage as per your health condition. You must consult a qualified doctor before taking any herbal supplements. Do not discontinue or replace an ongoing treatment of modern medicine with an ayurvedic/herbal preparation without consulting a qualified doctor.



# The Neem Tree

## An Arboreal Blessing

*Azadirachta Indica*  
Meliaceae Family

Neem  
Nimba  
Indian Lilac  
Veppam  
Arya Veppu  
Margousier

**2,000+ years**  
have proven the versatility of neem  
in traditional South Asian medicine  
Source: Pamela Paterson, "Neem the Wonder Tree"

### Medicinal Applications

Antibacterial	Antioxidant	Boils
Anticarcinogenic	Antiparasitic	Blood Detoxifier
Anticlotting	Antiperiodontic	Diuretic
Antifertility	Antiseptic	Eye Diseases
Antihyperglycemic	Antituberculosis	Immunomodulatory
Anti-inflammatory	Antiulcer	Pimples
Antimalarial	Antiviral	Skin diseases
Antimicrobial	Antiworm	Spermicidal

Source: Pamela Paterson, "Neem the Wonder Tree"

**200+ insect species,**  
as well as some mites, nematodes, fungi, bacteria and viruses are affected by neem  
Source: U.S National Research Council, "Neem – A Tree for Solving Global Problems"

**140 compounds**  
have been isolated from different parts of neem  
Source: R. Suhapriya, S. Nagari, "Medicinal Properties of Neem Leaves: A Review"

**100+ diseases**  
are treated by using the various parts of the neem tree  
Source: Pamela Paterson, "Neem the Wonder Tree"

**Protecting**  
Leaves applied to skin in a paste form to treat skin diseases; infused in tea to increase immunity of the body.

**Cleansing**  
Seeds dried, crushed and soaked to produce oil which is used in medicines, cosmetics and as a pesticide

**Healing**  
Bark and Twigs repels pests; twigs are chewed on to improve dental hygiene; bark is powdered and used in the treatment of various diseases

**Purifying**  
Roots Powdered and used in the treatment of various diseases

**Clarifying**  
Fruit eaten fresh or cooked

**Natural**  
Flowers used in dishes as a vegetable

The neem tree is native to lowland tropical regions, but neem production has expanded to many other areas in the world  
Source: World Agroforestry Centre

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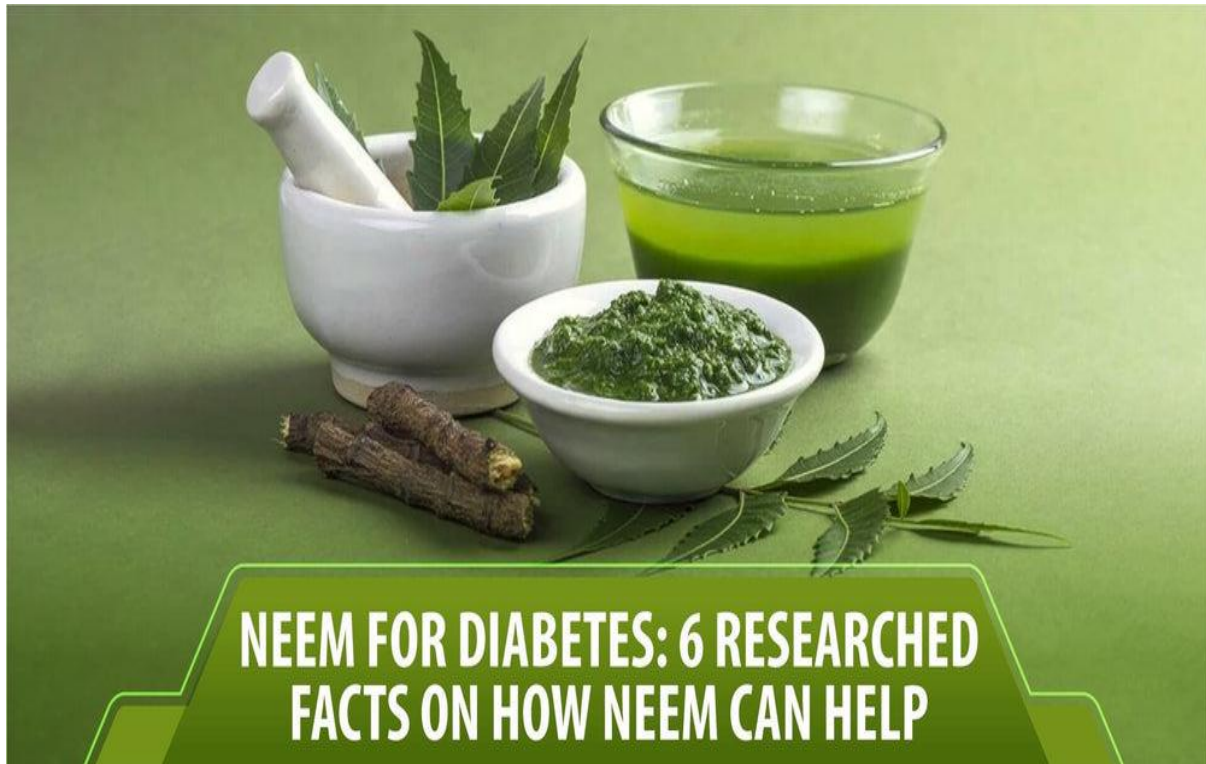
The plant product or natural products show an important role in diseases prevention and treatment through the enhancement of antioxidant activity, inhibition of bacterial growth, and modulation of genetic pathways. The therapeutics role of number of plants in diseases management is still being enthusiastically researched due to their less side effect and affordable properties. It has been accepted that drugs based on allopathy are expensive and also exhibit toxic effect on normal tissues and on various biological activities. It is a largely accepted fact that numerous pharmacologically active drugs are derived from natural resources including medicinal plants [1, 2]. Various religious documents such as Bible and Quran also supported the herbs role in health care and prevention. Islamic perspective also confirms the herbs role in diseases management and Prophet Mohammed (PBUH) recommended various plants/fruits in the diseases cure [3]. Neem ingredients are applied in Ayurveda, Unani, Homeopathy, and modern medicine for the treatment of many infectious, metabolic, or cancer diseases [4, 5]. Different types of preparation based on plants or their constituents are very popular in many countries in diseases management. In this vista, neem (*Azadirachta indica*), a member of the Meliaceae family, commonly found in India, Pakistan, Bangladesh, and Nepal, has therapeutics implication in diseases cure and formulation based on the fact that neem is also used to treat various diseases.



*Azadirachta indica* has complex of various constituents including nimbin, nimbidin, nimbolide, and limonoids and such types of ingredients play role in diseases management through modulation of various genetic pathways and other activities. Quercetin and  $\beta$ -sitosterol were first polyphenolic flavonoids purified from fresh leaves of neem and were known to have antifungal and antibacterial activities [6]. Numerous biological and pharmacological activities have been reported including antibacterial [7], antifungal [8], and anti-inflammatory. Earlier investigators have confirmed their role as anti-inflammatory, antiarthritic, antipyretic, hypoglycemic, antigastric ulcer, antifungal, antibacterial, and antitumour activities [9–12] and a review summarized the various therapeutics role of neem [13].

This review summarizes the role of neem and its active ingredients in the disease's prevention and treatment through the modulation of various biological pathways.

In Sanskrit neem is called 'arista' which means 'perfect, complete and imperishable'. 'Nimba' is the Sanskrit name of neem and is derived from the term 'nimbatī swasthyamdadati' which means 'to give good health'. Even the Persians have named neem as 'Azad- Darakth- E- Hind' which implies 'Free tree of India'. It shows remarkable potential in the fields of environment protection, pest management, and medicine. Neem might be a natural source of pesticides, insecticides, and agrochemicals apart from having potential health uses [14].



#### Potential uses of Neem for Infections:

**Viral infections:** Neem might help with dengue fever by possibly stopping the growth of the dengue virus. It might interfere with the replication of the coxsackie B virus, a group of viruses that causes ailments ranging from stomach upset to full-fledged infections in humans. Neem leaf has traditionally been used for viral diseases such as chickenpox and smallpox as well.<sup>3</sup> However, more studies are required to prove such claims.

**Bacterial infections and Skin infections:** Recent studies have focused on antibacterial activities of neem in the mouth, specifically in gum disease and tooth cavities [15].

Neem is also thought to be very effective in managing scabies, but sufficient scientific data does not exist for human studies.

Since neem might have potential antimicrobial properties, it may be helpful for various skin problems and diseases such as acne, eczema, and other skin conditions. Neem oil might also help with psoriasis symptoms.<sup>3</sup> However, more research is required to back up such claims.

**Fungal infections:** Studies have shown that neem might have antifungal characteristics, which might help with fungal infections like athlete's foot, ringworm and candida, commonly called as a yeast infection or thrush-causing

organism. Thrush is a fungal infection that can occur in the mouth, throat or other parts of the body. However, more research is required.



### SIDE EFFECTS

Neem is **POSSIBLY SAFE** for most adults when taken by mouth for up to 10 weeks, when applied inside the mouth for up to 6 weeks, or when applied to the skin for up to 2 weeks. When neem is taken in large doses or for long periods of time, it is **POSSIBLY UNSAFE**. It might harm the kidneys and liver.

### PRECAUTIONS

**Children:** Taking neem seeds or oil by mouth is **LIKELY UNSAFE** for children. Serious side effects in infants and small children can happen within hours after taking neem oil. These serious side effects include vomiting, diarrhea, drowsiness, blood disorders, seizures, loss of consciousness, coma, brain disorders, and death.

**Pregnancy and breast-feeding:** Neem oil and neem bark are **LIKELY UNSAFE** when taken by mouth during pregnancy. They can cause a miscarriage.

Not enough is known about the safety of neem during breast-feeding. Stay on the safe side and avoid use.

**“Auto-immune diseases” such as multiple sclerosis (MS), lupus (systemic lupus erythematosus, SLE), rheumatoid arthritis (RA), or other conditions:** Neem might cause the immune system to become more active. This could increase the symptoms of auto-immune diseases. If you have one of these conditions, it's best to avoid using neem.

**Diabetes:** There is some evidence that neem can lower blood sugar levels and might cause blood sugar to go too low. If you have diabetes and use neem, monitor your blood sugar carefully. It might be necessary to change the dose of your diabetes medication.

**Reduced ability to have children (infertility):** There is some evidence that neem can harm sperm. It might also reduce fertility in other ways. If you are trying to have children, avoid using neem.

**Organ transplant:** There is a concern that neem might decrease the effectiveness of medications that are used to prevent organ rejection. Do not use neem if you have had an organ transplant.

**Surgery:** Neem might lower blood sugar levels. There is a concern that it might interfere with blood sugar control during and after surgery. Stop using neem at least 2 weeks before a scheduled surgery.

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