

NEEM [*Azadirachta indica*] - THE WONDER PLANT : A REVIEW

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ABSTRACT

Azadirachta Indica is commonly known as Neem. It has a wide range of medicinal values & has been used extensively in Ayurveda, Unani & Homeopathic medicines & has become a cynosure of modern medicine. The different parts of Neem consists of more than 140 compounds. All parts of Neem i.e, bark, leaves, flowers, roots, seeds have been traditionally used for the treatment of many infections, inflammation, dental disorders & skin diseases. Neem leaves consists of many properties such as anti-inflammatory, immunomodulatory, anti-hyperglycemic, anti-ulcer, anti-malarial, anti-fungal, anti-bacterial, anti-viral, anti-oxidant, anti-mutagenic & anti-carcinogenic properties. This review summarises the antimicrobial activity & phytochemical screening of Neem leaf.

KEY WORDS : *Azadirachta Indica*, Neem, Antimicrobial activity, Phytochemicals.

INTRODUCTION

Neem (*Azadirachta indica*) is a tree native to India that has been used in traditional medicine for centuries. It has been shown to have a variety of medicinal properties, including antimicrobial activity.

The leaves, seeds, and bark of the neem tree all contain compounds with antimicrobial properties. These compounds include azadirachtin, nimbin, and nimbidin, which have been shown to be effective against a wide range of microorganisms, including bacteria, fungi, and viruses.



NEEM [*Azadirachta indica*]

Order	: Rutales
Suborder	: Rutinae
Family	: Meliaceae
Subfamily	: Meliodeae
Tribe	: Melieae
Genus	: <i>Azadirachta</i>
Species	: <i>Indica</i>

Figure 1: The taxonomy of Neem

One study found that neem leaf extract was effective against *Escherichia coli* and *Staphylococcus aureus*, two types of bacteria that are commonly found in infections. Another study found that neem leaf extract was effective against *Candida albicans*, a type of fungus that can cause infections in people with weakened immune systems.

In addition to its antimicrobial activity, neem has also been shown to have anti-inflammatory and pain-relieving properties, and it has been used to treat a variety of conditions, including infections, wounds, and skin disorders.

It's important to note that while neem has been shown to have medicinal properties, more research is needed to fully understand its potential health benefits and to determine the most effective doses and methods of use. As with any supplement or herbal remedy, it's always a good idea to talk to a healthcare professional before using neem or any other new treatment.

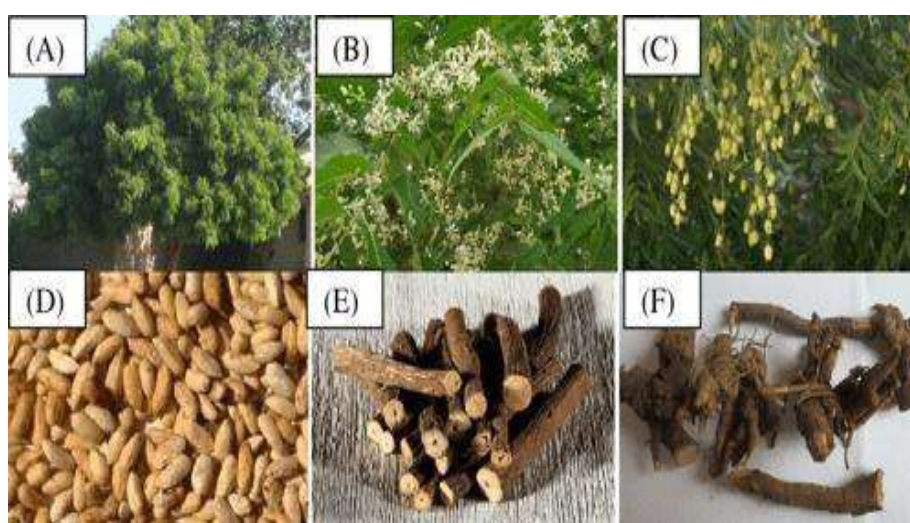


Figure 2: Parts of Neem tree of medicinal importance

NEEM

Bark	Alternative and curative of fever, Analgesic
Twig	Intestinal worms, spermatorrhoea, obstinate urinary disorder, diabetes, cough, asthma, piles, phantom tumor
Leaf	Intestinal worms, anorexia, biliousness, skin ulcers, cancer, leprosy, eye problem, epistaxis
Flower	Bile suppression, elimination of intestinal worms, phlegm
Fruit	Intestinal worms, urinary disorder, epistaxis, piles, phlegm, eye problem, diabetes, wounds, leprosy
Seed	Intestinal worms, leprosy, cancer
Oil	Intestinal worms, leprosy

Gum	Ulcers, skin diseases, scabies, wounds
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PHARMACOLOGICAL ACTIVITIES OF DIFFERENT PARTS OF NEEM

PART	BIOLOGICAL ACTIVITY
Leaf	<ul style="list-style-type: none"> ➤ Anti-fungal ➤ Antibacterial ➤ Antimalarial ➤ Anti-fertility ➤ Antipyretic ➤ Anti-inflammatory ➤ Analgesic ➤ Anti-ulcerogenic ➤ Anti-hypertensive ➤ Neuropharmacological ➤ Anti-dermatophytic ➤ Oro dental protection ➤ Hepatoprotective ➤ Immuno-stimulant ➤ Antioxidant ➤ Antigenotoxic ➤ Anticancer
Flower	<ul style="list-style-type: none"> ➤ Antioxidant ➤ Anticancer
Seed	<ul style="list-style-type: none"> ➤ Antimalarial ➤ Antifertility ➤ Antioxidant ➤ Anticancer
Bark	<ul style="list-style-type: none"> ➤ Antibacterial ➤ Antimalarial ➤ Anti-inflammatory

	<ul style="list-style-type: none"> ➤ Anti-ulcer effect ➤ Hepato-protective ➤ Immuno-stimulant ➤ Anti-cancer
Oil	<ul style="list-style-type: none"> ➤ Anti-fungal ➤ Anti-fertility ➤ Anti-pyretic ➤ Anti-inflammatory ➤ Anti-ulcerogenic ➤ Anti-hyperglycaemic ➤ Immuno-stimulant

PRINCIPLE CONSTITUENTS OF NEEM LEAF

	Content [on dry matter basis]
Carbohydrate	47.46 - 51.2
Crude protein	14.01 - 18.82
Crude fiber	11.20 - 23.80
Fat	2.31 - 6.93
Ash	7.73 - 8.52
Moisture [g/100g]	59.49
Amino acids [mg/100g]	
➤ Glutamic acid	73.3
➤ Tyrosine	31.5
➤ Aspartic acid	15.5
➤ Alanine	6.4
➤ Proline	4.0
➤ Glutamine	1.0
Minerals [mg/100g]	
➤ Calcium	3.4
➤ Iron	510.0

➤ Phosphorus	0.13 - 0.24
➤ Thiamine	80.0
➤ Niacin	17.1
➤ Vitamin C	0.04
➤ Carotene	1.4
Calorific value [K cal/100g]	129.0

PHYTOCHEMICAL CONSTITUENTS IN NEEM LEAF :

➤ 3-Acetyl-7-tigloyl-lactone-vilasinin	➤ Isoazadirolide
➤ 3-Desacetyl-3-cinnamoyl-azadirachtin	➤ Nimbaflavone
➤ 3-Desacetyl-salanin	➤ Nimbandiol
➤ 4 α ,6 α -dihydroxy-A-homo-azadiradione	➤ Nimbinene
➤ 6-desacetylnimbinene	➤ Nimbolide
➤ Azadirachtanin	➤ Quercetin
➤ Azadirachtanin-A	➤ Quercitrin
➤ B-Sitosterol	➤ Rutin
➤ Hyperoside	➤ Vilasanin

CONCLUSION

Medicinal plants and phytochemicals are receiving growing consideration in recent years for the prevention and treatment of various diseases including cardiovascular disease and cancer, because of their relative safety and efficacy. The Neem leaf is a treasure trove of phytochemicals with myriad health benefits. Although a number of therapeutically useful compounds have been identified, most of the pharmacological properties of Neem leaf have been reported only with crude extracts. It has become increasingly important to subject Neem leaf to the rigours of modern scientific research. Extensive investigations on the metabolism, tissue distribution, pharmacokinetics, toxicity and the molecular mechanisms of chemoprotection are necessary for the development of modern drugs from neem leaf.

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