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A REVIEW OF BRIEF STUDY ON NEEEM (AZADIRACHTA INDICA)

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ABSTRACT: Neem, also known as *Azadirachta indica*, is an economically successful fast-growing tropical evergreen plant that belongs to the *Meliaceae* family. It is a huge tree that is native to India and is employed because of its numerous properties. often found in America, Africa, and India. Neem is applied as a fertiliser, manure, fumigant, pesticide, soil conditioner, and coating agent for urea.

Due to the presence of active secondary metabolites with biological effects, its bark, leaves, seeds, fruits, and flowers are frequently utilised in medicinal therapy. Neem is renowned for its ability to fight cancer, diabetes, and inflammation. Numerous Hindu ceremonies employ neem. This review work illustrates several uses for neem, which will educate people about the wonders of neem and provide them wonderful knowledge.

KEYWORDS: *Neem, Ayurveda, Herbal Medicin, anti-inflammatory, anti cancer, anti-dandruff, natural cosmetics, Neem biocompounds;*

INTRODUCTION: For generations, people have believed that the neem tree (*Azadirachta indica*) possesses amazing health-promoting characteristics. In actuality, there is evidence that dates back as far as 4,500 years. Therefore, therapies have been a part of primary healthcare in poor nations. the tree or any of its components. Indian traditional medicine, for instance, touted success stories that weren't necessarily validated by science. *A. indica* is regarded as a versatile medicinal tree.

Trees can grow up to 30 metres tall, with limbs that are only half that width. The up to 30cm long, pinnately complex, glossy dark green leaves. Each leaf has 10–12. 7 cm long by 2.5cm wide serrated leaflets. It will flourish in regions that encounter intense heat of up to 48°C and will grow when there is little moisture. Neem is deserving of the moniker "miracle plant," according to even some of the most sceptical researchers.

In 1989, a group of San José del Cabo-based private growers committed to organic horticulture brought the neem tree to Baja California Sur, Mexico.

Classification

Kingdom: Plantae

Division: Magnoliophyta

Order: Sapindales

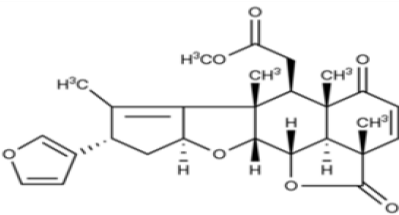
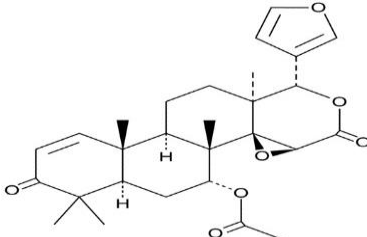
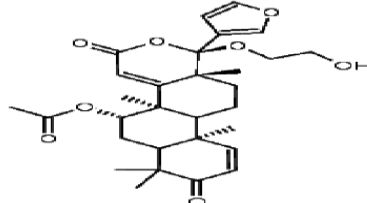
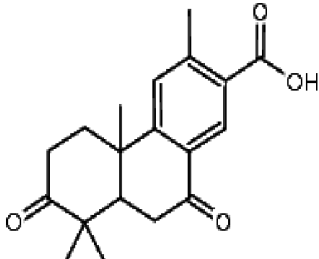
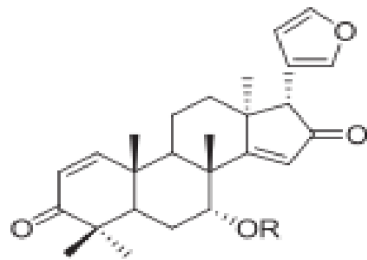
Family: Meliaceae

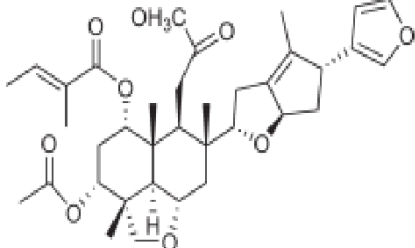
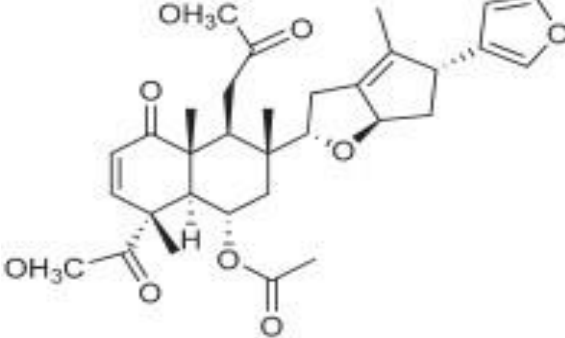
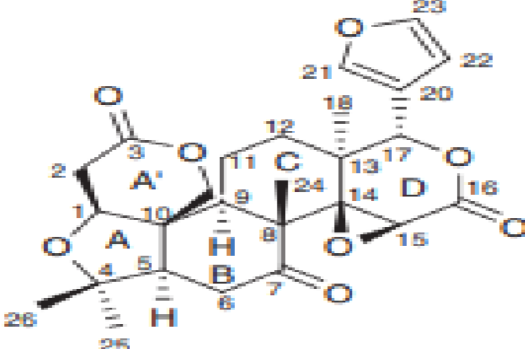
Genus: *Azadirachta*

Species: *Azadirachta indica*



Fig:1

Chemical Compound	Neem Part	Structural Formula	Biological Activity
Nimbolide	Oil from leaves and seeds, fruit		Psoriasis, antibacterial
Gedunin	Oil from leaves and seeds		Antifungal
Mahmoodin	Oil from seeds		Antibacterial
Margolone	Oil from seeds and stem bark		Antibacterial
Cyclic trisulphide	Oil from seeds and leaves	$ \begin{array}{c} \text{S} \\ \diagup \quad \diagdown \\ (\text{CH}_2)_m \quad (\text{CH}_2)_n \\ \diagdown \quad \diagup \\ \text{S} \quad \text{S} \end{array} $ <p>$m = 1 - 4$ $n = 2 - 3$</p> <p>Cyclic Trisulphide</p>	Antifungal
4 azadiradione-type Limonoids	Leaf Extract		Melanogenesis inhibition

2 salannin-type Limonoids	Leaf Extract		Melanogenesis inhibition
5 nimbin-type Limonoids	Root extract		Melanogenesis inhibition
Limonoid	Leaves extract		Anti-inflammatory

Benefits of Neem:

Anti-Inflammatory Effect of Neem: As anti-inflammatory drugs, *Azadirachta indica* plants or their separated compounds are used. A pathologic state is inflammation, engaged in a variety of illnesses, including diabetes and cancer, as well as other conditions, such as drinking alcohol and food digestion. The primary bioactive substance present in the limonoid neem.

It is a furanolactone, limonod (Contain both lactone and furan ring). Limonoid, often known as a pain reliever, has inhibitory effects on the generation of inflammatory mediators.

Antioxidant Effect: The natural products of plants, including their seeds, oils, leaves, bark, and roots, are a rich source of antioxidants.

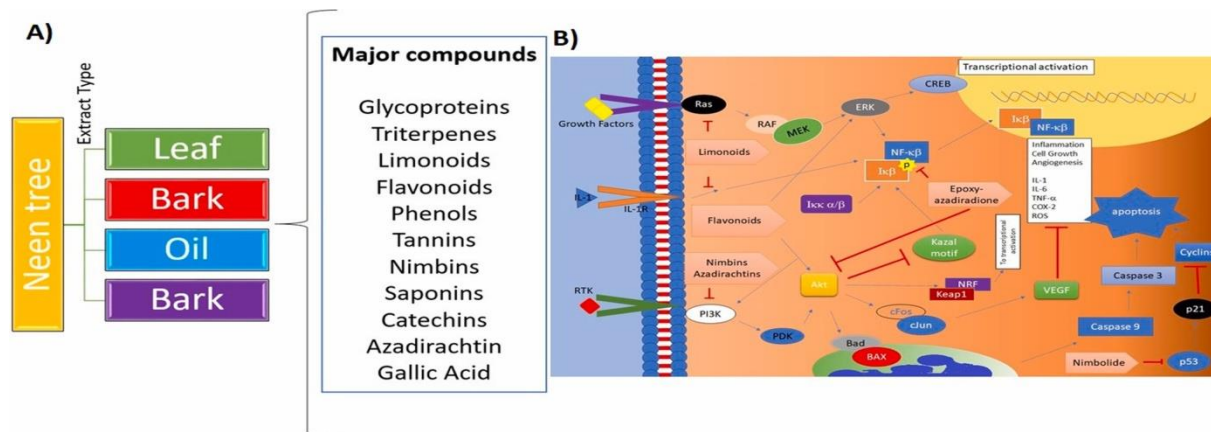
Azadirachta indica exhibits antioxidant activities in both the leaf and the bark concentrate. Polyphenols included in neem leaf extract attach to oral surfaces. When in combination with bacteria, red blood cells, and lysozyme, it provides long-lasting antibacterial as well as synergic antioxidant actions.

Anti Cancer Activity: Neem plants have anti-cancer effects, among others.

- Scavenging of free radicals
- Induction of programmed cellular death
- Antiangiogenic activity
- Inhibition of transformed cell proliferation
- Suppression of the metastasis process and of NF-κB factor

Fig2:Neem Tree (Right to left), Types of extracts. Major compounds found in extracts; examples of regulation compounds produce over naturally occurring processes in the human body.

Fig:2



Antibacterial Activity: Azadirachta indica is frequently employed in pharmacology and medicine. Neem's bark, steam, and leaves exhibit antibacterial action against Streptococcus and Klebsiella species.

Against Gram positive and Gram negative microorganisms, including Mycobacterium tuberculosis, neem oil extract is quite effective.

Antiviral Activity: Neem leaf and bark extracts have antiviral effects. Essentially, it prevents HSV-1 from entering cells.

Antifungal Activity: Azadirachta indica leaves and seed oil both contain cyclic trisulfide and have antifungal properties.

Application of Neem:

Neem used as Fertilizer: The neem seed cake functions as a bio fertiliser and aids in giving plants the essential nutrients. Additionally, seed cakes serve the dual purposes of fertiliser and pesticide, enrich the soil, inhibit the growth of soil pests and bacteria, provide macronutrients necessary for all plant growth, and help to increase plant yield over time. They are biodegradable, environmentally friendly, and improve soil quality.

Neem as Soil Conditioner: Neem is an organic soil conditioner that enhances soil quality. As a soil conditioner, seed granules and powder are utilised.

Neem Products:

Neem soap: Neem soap is popularly used in India for clear skin, rashes, irritation, and deematiasis. It is also antimicrobial.

Benefits:

- Removes excessive oil
- Prevents skin infections
- Controls acne & pimples
- Help in itching & dryness
- Clear &Glowing skin
- Moisturizer



Neem face wash: Neem facial cleanser has antimicrobial qualities. but also shields the skin from outside aggressors that can harm it.

Benefits:

- Fights acne and clear the skin
- Prevents hyperpigmentation
- Antiseptic and anti-bacterial
- Eliminates dead skin cell



Neem shampoo: Hair follicles can be cleansed and strengthened with neem shampoo. Neem benefits for hair include stronger, healthier roots because of improved blood flow to the scalp.

Benefits:

- It is promote new hair growth
- Prevents hair loss & thinning
- Antidandruff

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